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THE IRON AGE

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A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

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CAHALL BOILERS See Page 78.

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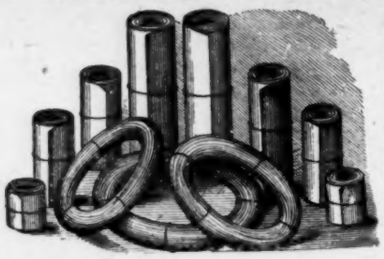

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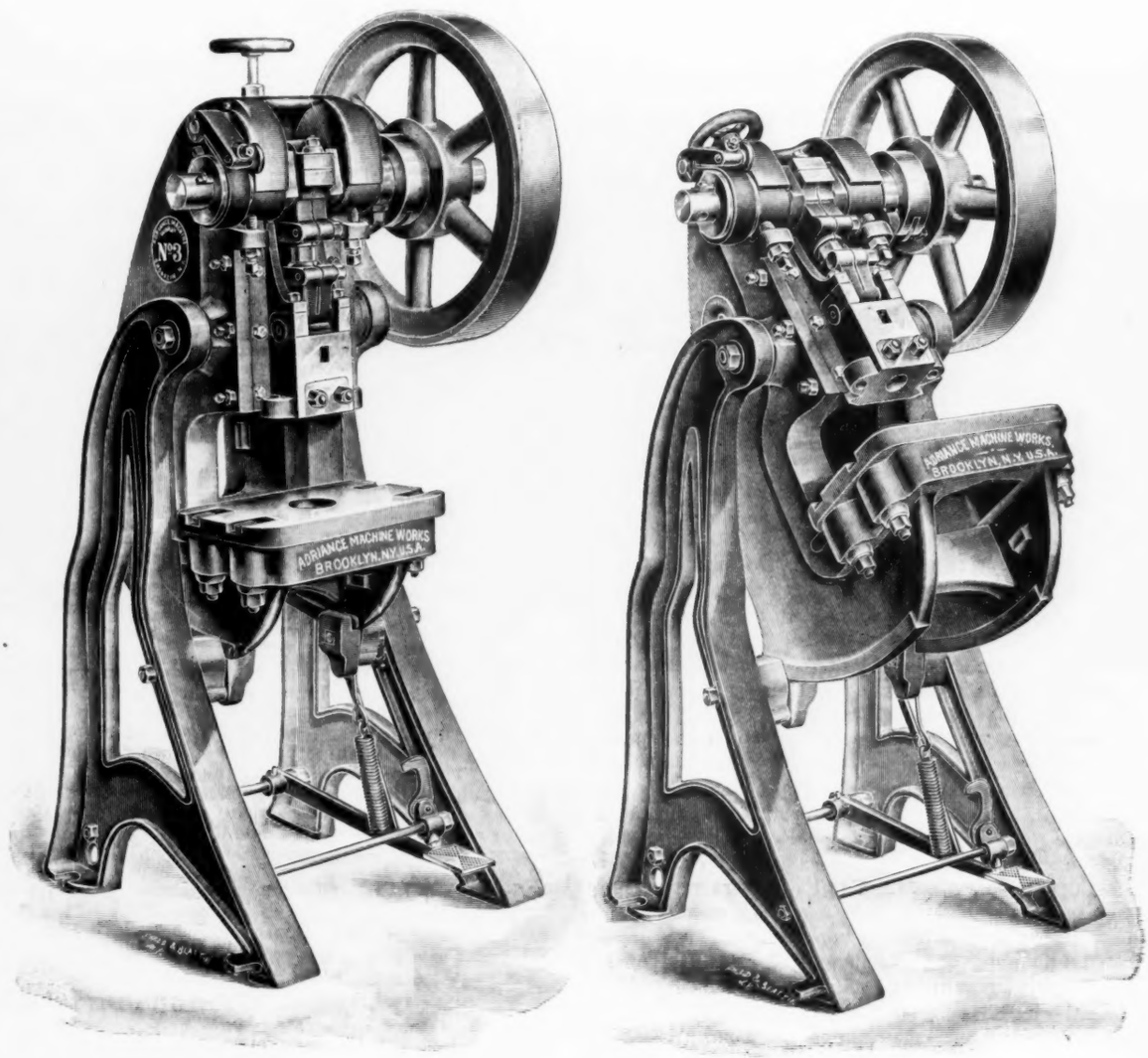
THE IRON AGE.

THURSDAY, MARCH 30, 1899.

The Adriance Inclinable Open Back Press.

The illustrations show a new design of the well-known type of open back adjustable power press—a style of press that has always been in favor and appreciated by the trade because of its wide range of usefulness in operating with dies upon sheet metals and wire. It is built by the Adriance Machine Works of 124 Imlay street, Brooklyn, N. Y., and is being protected by patents. The cuts represent the press in both of its positions—inclined and vertical—and plainly show the method of obtaining the adjustment and the "straight line" construction of its frame. This firm have been building this type of press for several years, and because they have always contended that the "straight line" principle of construction was the one necessary to the greatest strength and rigidity they have from the beginning of their practice as press builders used it in the design of their press frames. There are many new features and structural changes embodied in the press illustrated.



THE ADRIANCE INCLINABLE OPEN BACK PRESS.

Its new features are its clutch and its connection to the treadle. The clutch has been the weakest and most hard usage, because it must instantly start the crank shaft with all of its appendages and while under the resistance of the shaft brake, from a state of rest to the speed at which the fly wheel is revolving. In doing this the clutching parts are subjected to a hard blow, and it would seem to be obvious that these parts, in order to successfully withstand this hardship, must not only be properly proportioned but must be engaged or interlocked to their full depth before striking, as that is their strongest position. If the clutching parts are released just at the moment when the flying part is about to pass the stationary one the parts do not have time to fully interlock, which results in the breaking, chipping and wearing off of the engaging corners and edges of these parts, bringing about their rapid destruction and necessitating their early and frequent replacement. The peculiar mechanism of the clutch used on this press so times the release of the clutching parts that they fully engage before striking, and they cannot by any possibility be released when they are near to or passing each other, resulting in what is claimed to be a decided nov-

elty- an almost indestructible clutch. In other respects the clutch is noiseless, simple, strong, effective, durable, easily repaired, quick acting and locks both ways. It is connected to the treadle by a rod having the joint pins made a part of itself, and at the treadle end the treadle spring is hooked to the joint pin on the side of the treadle opposite to the rod, thus acting as its keeper and making it impossible for these parts to become disconnected so as to falsely release the latch, engage the clutch, start the press, and perhaps injure the operator. This treadle rod is also free from joints or connections between its extremities that may become loose and therefore dangerous and that would require adjusting every time the press was changed inclinably.

The brake is a local one, inasmuch as its action is not continuous during the whole revolution of the crank shaft, but is applied only after the crank has passed the lower center—immediately after, if a heavy underspring is being used, and later if the press is being used on work that does not require the use of this spring with its strong upward impulse. The tension of the brake is easily and quickly changed, and the whole construction is simple and can be maintained economically. The treadle is supplied with a device that serves to hold it down for continuous running and to lock it up so that it cannot be accidentally tripped while setting dies with the fly wheel running. The fly wheel is provided with an outwardly extended flange capable of being easily gripped by the hand to facilitate the turning of the crank shaft back and forth in setting dies while the power is off the wheel.

The knock out is the device for clearing the work from the punches. It is placed behind the plunger and is a vertically sliding steel bar with its lower end bent to project forwardly into a recess in the plunger over the punches, and the plunger has an opening in its front side through which the end of the knock out and its relation to the punch stems can be clearly seen so as to facilitate the setting of the knock out. This is done by manipulating a screw placed over its slide, the hand wheel of which is seen at the top of the press. This construction gives a knock out that in all adjustments presses squarely upon the punch stem, that can be quickly and positively set without danger to itself or to the dies, and which does not require the die setter to go behind the press to guess how much he must adjust it.

The plunger has long bearings which are thoroughly bedded into the press frame and one side of which is rigid with the frame and the other side of which is gibbed. The joint between the wrist and the plunger extends the whole width of the latter, which gives unusually large wearing surface. The punch stem hole is irregular in shape, so that it will firmly hold punch stems that are "off" in size, that are out of round or cracked. The punches are held by a cap clamped up by two hardened double length nuts working on steel studs. To adjust the press inclinably it is necessary to loosen three nuts, push the press into the opposite position, and again tighten the nuts. The press is pivoted in its legs through its center of gravity, and a boy can easily do the job with the heaviest press. These presses are built in six sizes, ranging in weight from 500 to 4000 pounds.

One of the largest rudders that has ever been cast in the world has just been finished by the Pennsylvania Steel Casting Company of Chester, Pa., for the American Line steamship "Rhynland," now at Cramp's shipyard in Philadelphia undergoing repairs. The rudder, which was cast in a solid piece, weighs over 13,000 pounds, and the stern post, which was cast at the same time, weighs 9000 pounds. Heretofore rudders have been cast in two pieces and afterward riveted together into a solid piece.

Two hundred laborers employed in the plate mill of the La Belle Iron Works, Wheeling, W. Va., were notified of a 10 per cent. increase in wages, to take effect on April 15.

Reports are current that the Pennsylvania Steel Company are working on a plan of financing their affairs to provide for working capital.

The Production of Open Hearth Steel.

The American Iron and Steel Association has just issued the following statistics of the production of open hearth steel, ingots and castings:

The production of open hearth steel in 1898 was 2,220,492 gross tons, against 1,608,671 tons in 1897, an increase of 611,821 tons, or over 38 per cent. The following table shows the production of open hearth steel ingots and direct castings by States during the past four years in gross tons:

States—Gross tons.	1895.	1896.	1897.	1898.
New England	36,733	48,055	51,402	47,381
New York and New Jersey	32,203	32,120	39,521	47,957
Pennsylvania	904,352	1,009,608	1,271,751	1,817,521
Ohio	75,637	64,691	78,357	79,886
Illinois	49,500	101,832	120,609	173,103
Other States	38,757	42,394	47,031	54,644
Totals	1,137,182	1,298,700	1,608,671	2,220,492

The open hearth steel made in 1898 was produced by 65 works in 13 States—Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Kentucky, Alabama, Ohio, Indiana, Illinois, Wisconsin, Missouri and California.

Of the total production in 1898 1,559,412 tons were made by the basic process and 661,080 tons by the acid process. In 1897 the production by the basic process amounted to 1,056,043 tons and by the acid process to 552,628 tons:

States—Gross tons.	Basic open hearth steel.	Acid open hearth steel.	Total Gross tons.
New England	9,466	37,915	47,381
New York and New Jersey	13,024	34,933	47,957
Pennsylvania	1,321,308	496,213	1,817,521
Ohio	43,650	36,231	79,886
Illinois	143,891	29,212	173,103
Other States	28,073	26,571	54,644
Totals	1,559,412	661,080	2,220,492

The total production of open hearth direct steel castings in 1898 amounted to 110,787 gross tons, of which 18,460 tons were made by the basic process and 92,327 tons were made by the acid process. The following table gives the production of open hearth steel castings by the acid and basic processes in 1898 by States:

States—Gross tons.	Acid castings.	Basic castings.	Total.
Massachusetts, Connecticut, New York and New Jersey	14,657	.....	14,657
Pennsylvania	45,712	1,558	47,270
Ohio and Indiana	19,669	150	19,819
Illinois, Wisconsin, Missouri and California	12,289	16,752	29,041
Totals	92,327	18,460	110,787

Our total production of open hearth steel ingots and castings has almost doubled since 1895, when we made 1,137,182 tons.

The New England Electric Vehicle & Transportation Company were incorporated on March 24, at Trenton, N. J. The capital is $25,000,000. The company are authorized to manufacture appliances for operating vehicles and to manufacture and operate vehicles themselves. The incorporators are James E. Hayes, Camden, N. J., and Arthur Phillips and Augustus Treadwell, Jr., of New York. The new company are said to be a subcompany of the Electric Vehicle Company, and intend to operate in New England, particularly in Boston. It is understood that they will devote more attention to freight than to passenger business, thus using trucks rather than cabs. The $25,000,000 of stock is all common and was issued at $5 a share, subject to a further possible assessment of $5 June 1.

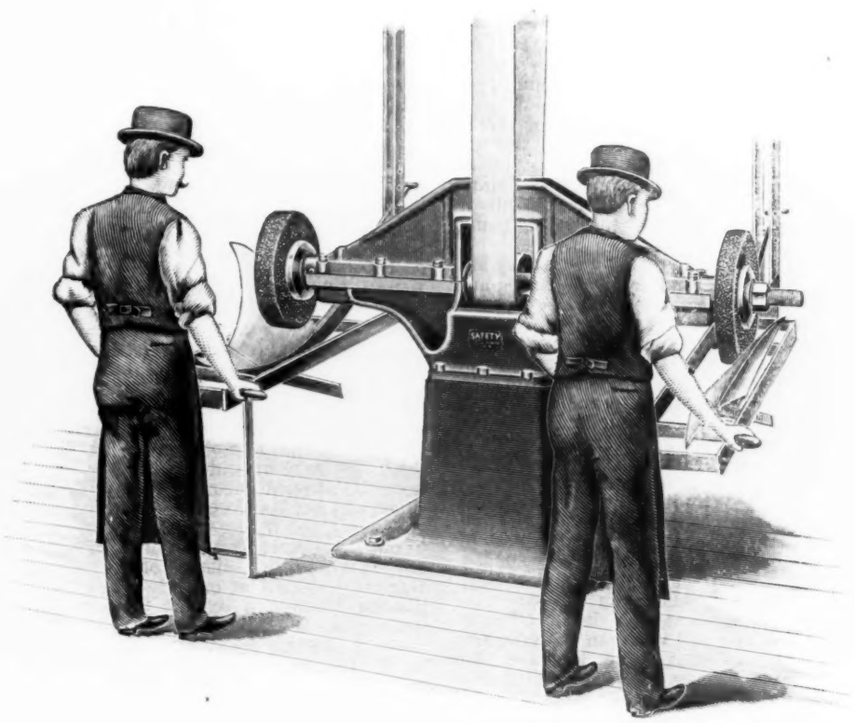
The Pressed Steel Car Company, Pittsburgh, Pa., have received an order from the Dominion Coal Company of Boston for 50 steel cars of 100,000 pounds capacity each. Also a contract for 1000 steel cars from the Lehigh Valley Railroad, and a further contract from the Chicago, Lake Shore & Eastern Railroad for 150 steel freight cars, and for 50 cars for the Lake Superior & Ishpeming Railroad. Active work has been commenced on the new works to be erected by the Pressed Steel Car Company, at McKee's Rocks, Pittsburgh. It is hoped to have the new plant ready to turn out cars not later than September 1. It is probable a bridge will be constructed across the Ohio River, connecting the present works in Lower Allegheny with the new works at McKee's Rocks.

A fine record was made last year by the Union Station in Chicago, where, 7,500,000 passengers were handled without an accident, and $50,000,000 worth of baggage without the loss of a single piece. In respect of baggage it is further recorded that this is the third successive year in which no claim has been made for lost baggage of any kind.

Machine for Grinding Plows, Etc.

A machine built by the Safety Emery Wheel Company of Springfield, Ohio, is designed principally for grinding plows, cultivator shovels and other agricultural implements where a smooth, bright surface is required. The old way of grinding was usually with a wet grindstone from 4 to 6 feet in diameter and 6 to 12 inches face, and was done by placing the work on a cradle and grinding from the under side; or a spring board was used and the work held in the hands and by the knees of the workman. As grindstones are uneven in hardness, having hard and soft spots, the stones soon get out of round and require truing up. While this truing up is being done a cloud of grindstone dust fills the room and is inhaled by the workmen. This soon tells on the health of the strongest men; so much so that a regular grinder's life is usually found to last only from 8 to 12 years when constantly employed at that work.

In the new method of grinding with a solid emery wheel all the dust is removed by exhaust fans. As the wheels are even and can be made of any degree of hardness the work requires they need very little truing up or dressing. It has also been found that usually a solid emery wheel weighing 100 pounds will do more work than a grindstone weighing a ton, so that the saving from the expense of handling them is considerable. The machine illustrated is quite heavy, weighing about 1800 pounds, and has the top part made truss or diamond shape, to insure rigidity. The bearings are long and a spindle 2¼ inches in diameter runs in self oiling boxes. The emery or polishing wheel has plenty of distance between the wheel and sides of the machine in order not to interfere with the work or the cradle used for holding the work. The machine is made of such hight as not to require the workman to be in a stooping position while working at it.



MACHINE FOR GRINDING PLOWS, ETC.

Steel Girders Burned by an Electric Arc.

An interesting useful application of electric arc burning, says the *Western Electrician*, recently took place in Chicago in connection with reconstruction work in the New York Life Building. The contractors for the building, the Moulton Starrett Company of Chicago, were engaged in remodeling a portion of the building to suit a new tenant. To provide for two new stairways from the main floor of the building to the basement it was found that it would be necessary to cut through two sets of three steel I-beams. These six I-beams were each 15 inches high with a ½-inch web and 6-inch flange varying in thickness from ¼ inch on the outside to 1 inch at the center. It will be appreciated that the section of the metal to be cut through was considerable. The point at which the cut was to be made was located in such a position that it would be necessary to have special saws made, and as three I-beams of this size, side by side, would not cut very easily, it was estimated that in addition to the time required to make the special saws it would take two men at least two weeks at $3.50 a day to saw them off. This loss of time in finishing the job and the expense involved were important considerations, and when it was suggested to Ralph Starrett, superintendent of the contracting company, that inasmuch as a smooth cut was not necessary, it might be feasible to get the girders burned off with the electric arc, he placed the matter in the hands of Clyde J. Coleman of the Coleman Laboratory of Experimental Engineering. Mr. Coleman has done considerable work in the line of electric arc burning for the purpose of getting into safes and vaults with broken locks, and for cutting new doorways in vaults already in place, and also as an interesting experiment to demonstrate the possibilities of safe burglary by this method. Mr. Coleman pronounced the plan of burning off the I-beams perfectly feasible and undertook the task. The time actually required for electrically burning off the six girders was about 12 hours, and from four to five hours more were spent on mechanical work, such as removing girders to get at the remainder. The electric arc therefore did in two working days what would have required from two to three weeks by the usual method, resulting in a great gain of time for completing the remainder of the job.

The plan of operation is very simple. Current was applied at 110 volts from one of the dynamos in the plant of the building. The current used was about 350 amperes. The positive side of the circuit was grounded on the structure of the building and the negative connected to a carbon holder containing a 1½-inch round carbon. The carbon holder had a wooden handle. The operator struck an arc between the spot on the iron to be melted and the carbon. The light and heat were intense, and the effect was very disastrous to the eyes where proper precautions had not been taken. The arc is usually covered over with a muffle, consisting of an asbestos lined iron box, with a hole in the back just large enough to admit the carbon used. The box is placed against the iron to be burned and the carbon thrust through the hole and the arc drawn. In places where there is not room for the box the carbon is simply thrust through a shield consisting of a sheet of heavy asbestos board. Some resistance has to be placed in the circuit, as is the case with any arc working on a constant potential circuit. The resistance used in this case was simply a few turns of German silver wire placed in a pail of water under a faucet, from which it was constantly replenished.

Observations of an American Rolling Mill Engineer.

BY WILLIAM GARRETT.

PARIS, FRANCE, March 13, 1899.—Here I am like a Wandering Jew, having (like the Arab, folded his tent, &c.) disappeared from among my fellow-citizens to bob up here, but, thank God I expect to return to the land of my adoption, sailing on the 18th. Here and in many other places I have visited I find one uniform cry among all iron and steel manufacturers, and that is, Are the Americans going to draw up out of the iron and steel trade entirely? though at the present time they have all, and in some cases more than they can do working full time, and the main thing they are short of is steel in the shape of blooms or billets. When we look at the vast increase in the exportation of steel from the United States to foreign countries during the past two years it is natural that we should feel proud; but to the assumption that this increase was obtained under normal conditions I for one cannot agree.

We will admit that thousands of tons of plates have been shipped from the United States to the Clyde, the center of the plate trade in Europe, we might say; but with all that every plate mill in Great Britain for the past two years and even to-day has more orders than can be filled, so in the above case, at least, we only sent to the Clyde plates that could not be obtained at any price in Britain. We have sold thousands of tons of rails abroad in competition with Great Britain and Germany, but this was because every steel rail maker had all he could do, getting £4 5s. per ton for his rails. I wonder how many tons we would have been able to sell abroad if rails in Europe were made and sold at £3 5s. per ton, which point, I believe, was reached at one time?

I was in a large wire mill in England where they had two rod mills making about 120 tons every 24 hours, and every billet which was 2 inches square in size was imported from a steel works in Pittsburgh (excepting a few tons of steel of a special quality). In almost every leading wire mill in Great Britain American material in the shape of a 2-inch billet can be found; yet every steel works in Great Britain has more orders than it can fill, and all this when Europe has produced more iron and steel last year, and has even increased its export trade (Germany in particular) more than ever before. Then what credit are we entitled to when we only sold them what they had to get but could not make? Why it is just like selling a loaf of bread to a man who is starving, and who has money to pay for that loaf. Was it by good business or superiority in business that we got the trade? Let us see. A Jew was giving his son Isaac some pointers in a business way. He said, "Mine son, when you sell von man von coat and dat man vants dat coat, then dat is nothings, dat is nothings; but ven you sell von man von coat and dat man don't vant dat coat, then dat is business, dat is business." In my mind that is the whole thing in a nutshell.

We boast of our superiority in manufacture by the use of labor saving appliances, but even in this we are deceiving ourselves. A prominent man in steel works in the United States, who has cut quite a marked figure in a certain popular line, visited a large German steel works, and in advocating the adoption of his improved method claimed he could save them 50 cents per ton in tonnage labor, when to his astonishment he found, on the labor sheet being shown, that it only cost them in their crude way 55 cents per ton. Yet this German mill only produced 70 tons in 24 hours, whereas the American mill produced 300 tons in the same time and employed about one-half the number of men. Why? Because in spite of the improved methods in the States to produce large product with the least labor, the wages paid are so much in excess of those paid abroad as to wipe out all the benefit. In fact, the wages received by the five highest paid men in this particular line are in the States more than would have to be paid to 24 men employed in the German mill. True, the adoption of American methods would have reduced the cost of labor there from 55 cents to about 30 cents per ton, but as the Germans were paying good dividends as they were, and it would involve considerable expenditure to make the change, they naturally decided to stay as they were.

Why, then, are we able to export in such large quantities iron and steel? It is not only because of the cheapness of our raw material in ore and coal and coke which gives us cheap material in the shape of steel billets, blooms and tin plate bars, but we also take some of those articles at a cheaper stage, and make them into finished articles, which is not done abroad. To cover the whole ground would make too vast a subject, so I will only treat of steel billets for making steel merchant bars and wire rods.

A prominent iron and steel broker from Liverpool some 15 years ago met the writer at Pittsburgh in a wire rod mill where they were taking a 4-inch billet and rolling it direct into a No. 5 rod. This fact appeared to annoy him very much, for he said: "You fellows are all wrong here; why don't you educate your steel makers to make a 2 inch billet as cheap as a 4-inch billet?" Fifteen years have elapsed since then, and at that time thousands of tons of wire rods were imported into this country; in fact, that Liverpool broker had procured a very large order. Meantime the United States pursued its foolish way of making a 4-inch billet. Importation of rods ceased, and exportation of rods is now in order. Still Great Britain and Germany are struggling to make a 2-inch billet as cheap as a 4-inch, which is as logical as "emptying the ocean with a sieve." But a "cloud no bigger than a man's hand" has appeared in this connection in Europe. A large German wire rod and wire manufacturer has taken steps to get out of the 2-inch billet rut, and is now building a large rod mill (a twin rod mill) to take not a 2-inch billet, not a 4-inch, but a 5-inch square bloom, which will be rolled direct into a No. 5 or No. 6 rod. This will be the first step to enlighten the steel makers abroad that a 2 inch billet cannot be made as cheap as a 4-inch or a 5-inch billet, and by adopting the latest known methods of reducing this 5 inch billet to a No. 5 rod, it will be proven that it can be rolled into rods for less cost per ton than a 2 inch billet. The extra power required for the larger billet is more than counterbalanced by the ability to use automatic means for handling, heating, &c., on the larger size billet.

For the export trade a 4-inch billet is much more desirable than a 2 inch billet, since it is shorter and more compact and more easily handled. In using a 4-inch billet foreign buyers will have the advantage of greater competition among American steel makers, for all Bessemer steel makers can make a 4-inch billet, whereas there are only two or three large Bessemer steel makers who can roll 2-inch billets. Except as a gift, 2-inch billets have never been sold as low as 4-inch. In fact, looking at it from any point of view, the advantages all turn to the using of a 4-inch billet instead of a smaller size billet.

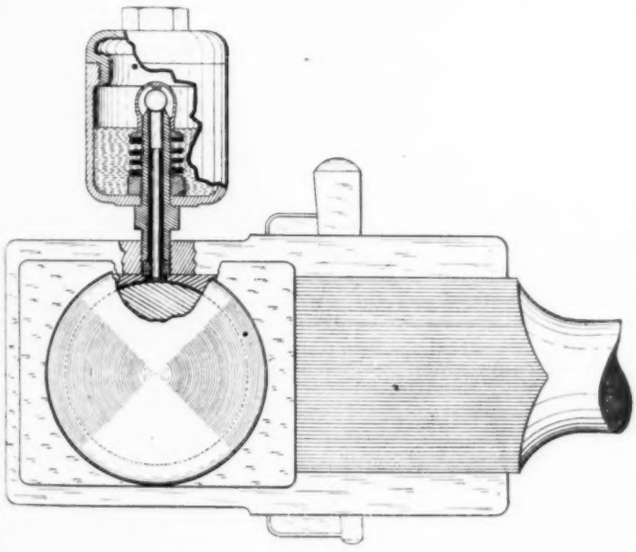
In conversation with many wire rod makers in Great Britain I find that they have taken steps to induce some of their steel makers to give them a 4-inch billet for less money than a 2-inch, but it appears in vain. Meantime foreign material is being poured into Great Britain from all parts of the world, most of which is to be reshipped to Australia and the colonies and South America. The trouble with our British cousins is that they are rather bigoted and set in their ways. This includes the workmen, and if they do not change their tactics soon they will some day wake up and find that nearly all of their business has slipped through their fingers, for the booming times will not last forever. During my visit to Europe a year ago I was trying to induce a large user of wire rods to put in an American rod mill. He replied, "If you can tell me where I can dispose of the product I will put in a Garrett rod mill at once." A few days afterward I was passing through a seaport town in England. I took a walk along a dock, and I saw some wire rods on the dock. I said to a dock hand, "Where are those rods going to?" He replied, "They are not a-going, sir; they have just a-come. They have come from Germany." Walking a little further along I saw some wooden barrels filled with bright wire. This I also found had come from Germany. A little further along I saw some kegs of nails marked "Made in Germany." Upon this I could not help thinking that so far as wire rods, wire and wire nails were concerned Great Britain did not produce all she needed. Turning into a street that led toward the center of the town I saw a building being constructed; saw some steel girders. Thinks I, with American pride, those girders will be stamped "Carnegie & Co.," and come from America, but no, "Dortmund, Germany." Passing along further I came to a small show window, in which there were some small cheap pictures placed on view; among them I saw a picture of the Prince of Wales. At the bottom of the picture there appeared to be, at first sight, the name of the painter who painted that picture; but no, it only said, "Made in Germany." In deep meditation I passed along, when a delightful strain of music struck my ear. Looking around I did not see the performers. Turning abruptly the corner of the street I saw them, and I found they were also "Made in Germany." All this, while having considerable satire, has more truth than poetry in it.

Before closing this, I note from your issue of *The Iron Age*, March 2, that you are in the midst of a raw material famine for even home consumption, that ore and coal mine production are being pushed to the extreme limit on the one hand, on the other the billet market controlled by large organizations. Is not this the proper time to utilize part of the millions of tons of steel to be found on the face of Mother Earth and put it into finished material? Who is the Moses who will help us in this direction in this our hour of need?

L. L. Ensworth & Son of Hartford, Conn., are carrying a large stock of burnt leather for case hardening or other purposes.

The Egan Automatic Oil Cup.

The new motion bearing oil cup herewith illustrated has been brought out by the Egan Mfg. Company, Milwaukee, Wis. The cut shows the cup in use on a connecting rod, with a portion of it broken away to enable the method of feeding to be disclosed. The stem projects into the body of the cup. Through the stem is a large straight hole, made thus so that it cannot become clogged from oil deposits or impurities. Covering the upper opening of the hole is a steel ball, inclosed in a threaded four-armed cage. A projection in the upper part of the cage determines the movement of the ball on the end of the stem. A tension spring under the cage and around the stem serves to keep the cage in the position to which it is adjusted. As the engine is started in motion the oil is thrown against the ball, which raises slightly from the seat and allows the oil to pass into the tube. The amount of oil used is regulated by the play given the ball between the stem and the cage, and it may be adjusted so as to empty the cup in five minutes or 30 days, as the work may demand. When the cup is used on connecting rods or similar bearings a brass tube is provided which projects from the hole in the stem down to the pin, thus avoiding any possibility of the oil escaping between the brasses. This tube is adjustable and can be moved up or down in the stem to meet the requirements in each case. The use of this cup avoids such devices as center oilers, with their stands, tubes, &c., or the wipe rigs commonly used. The



THE EGAN AUTOMATIC OIL CUP.

oil is not thrown around the engine room and no oil guards are necessary on the engine. No attention is required in starting or stopping. It is made with an aluminum body and steel stem, which will especially be appreciated for high speed work. The cup is also made in brass or nickel with a steel stem, but the aluminum cup is 60 per cent. lighter. The cup is made in four sizes, from 2 to 4 inches in diameter, but an all brass cup is made in 1½ and 2 inch size for gas engines, threshing machine engines, &c.

Preparatory to supplying the Union Carbide Company with electrical power to operate their large new plant now in building, the Niagara Falls Power Company have placed an order with the Westinghouse Company for seven 2500 horse-power transformers. These machines will involve the largest units that have ever been manufactured, and will be similar in pattern to the transformers built by the Westinghouse Company for the Cataract Power & Conduit Company of Buffalo, and installed in the Ohio street transformer station of that company some months ago. They will be of the standard oil insulated type, water cooled by the circulation of water through coils of pipe immersed in the oil, which method does away with the necessity of all blowers, fans, pumps or motors for cooling, and when once in proper regulation requires but little attention. The Westinghouse people promise that the efficiency of the transformers will be very high. They will be used for stepping up the 2200 volt current, as it comes from the generators to 4400 volt, three phase, for the carbide company's use. If desired the transformers may be used for raising the 2200 volt current to 11,000 or 22,000 volts, three phase, for the Niagara-Buffalo transmission line, or if need be they may be employed in stepping down the voltage of the current.

The Ensley Land Company.

Under date of March 10 A. M. Shook of Birmingham, Ala., has issued the following statement:

The Ensley Land Company were organized under a charter granted by the State of Alabama in 1890, and their property originally consisted of 3797.25 acres of land. The first sale was made in 1893, and at the end of 1895 the total sales amounted 50.73 acres. The total amount realized from sales to that date was $2,325.20. No further sales were made by the company. On the 25th of January, 1897, the whole property was sold to satisfy a judgment in favor of the Birmingham Railway & Electric Company for $17,373.98, which belonged to the estate of Jas. C. Warner, deceased. In order to prevent the property from being sacrificed for this small debt, and to protect the other creditors and the stockholders, an agreement was made with all the creditors by which the property was conveyed to Jas. Bowron and N. E. Barker in trust. The trustees are, first, to sell property enough to pay the debts; secondly, to reconvey the remaining property to the stockholders of the Ensley Land Company. The report of the trustees shows that they have sold 409 acres of land for $51,773 47, which amount has been applied to the reduction of debts of the company in accordance with the stipulations in the declaration of trust. This leaves 3337.52 acres unsold at this date. The total indebtedness of the company on this date, after deducting the $51,773 47 received from the trustees, is $97,898.89.

On the 11th of April, 1893, the stockholders of this company by resolution reduced the capital stock from $10,000,000 to $500,000, by authority of an act of the Legislature of the State of Alabama passed 10th of February, 1893. At this date 61 per cent. of the stock has been converted into new certificates on a basis of $500,000, leaving still outstanding $3,900,800 face value of the old stock that has not been changed.

Last July the Tennessee Coal, Iron & Railroad Company commenced the erection of a large steel plant at Ensley with estimated capacity of 1000 tons per day. This was followed by locating the Alabama Steel & Wire Company at Ensley, who are now building a wire, rod and nail mill, with an estimated capacity of 600 tons a day. A large brick works and two large wood working establishments have been located there. Negotiations have been completed for a plant that will manufacture from furnace slag from 1000 to 3000 barrels of Portland cement daily. Negotiations are now pending with two large companies for locating their plants at Ensley, one for the purpose of manufacturing steel pipes and one to erect a beam and girder mill. These industries, when working full, will give employment to no less than 5000 men. In addition to the above named plants, the Tennessee Coal, Iron & Railroad Company will this year open two new coal mines, and perhaps build at least one addditional furnace to the four already located at Ensley. They will also concentrate their machine shops and foundries there. If houses can be built fast enough to shelter all the operatives required in connection with this development, your property, which practically surrounds both the towns of Pratt City and Ensley, will within two years have a thriving population of 25,000 people. The indications are that the developments and improvements in the Birmingham district will be greater in the next two or three years than at any time in its history. If this is true the property of the Ensley Land Company will necessarily derive more benefit from this development than any other section of the district, for the reason that manufacturers and users of either wood, iron or steel products will naturally seek location at Ensley, first because the transportation facilities are better than any other section of the district: secondly, all of the raw materials that they will require in making their products are produced at Ensley.

The Shelby Steel Tube Company.—The Shelby Steel Tube Company of Cleveland, Ohio, call attention to the use of cold drawn seamless steel tubing for locomotive bushings, collars, rings, commutator and bushings, armature journals, fusion bushings, roller bearings and hollow spindles. The Shelby Steel Tube Company have a process of manipulating and working the solid open hearth steel billet into a hollow cylindrical tube, which, it is claimed, improves rather than destroys the original integrity of the metal. The process utilizes the neutral element of the solid cylindrical billet by forming the interior of the billet into a surface without waste of metal. In comparison with boring and machining from the solid metal a better quality of product is obtained, and economy of labor and cost in the finished article is secured.

The Development of Industry in America.

BY KARL WITTGENSTEIN, VIENNA.

We republish below the last part of a paper read before the Oesterr. Ingenieur und Architekten-Verein by Karl Wittgenstein of Vienna. The first part consists of an interesting statistical comparison between Germany and the United States, followed by a historical sketch. Mr. Wittgenstein's review of the causes of the development of industry deserves attention not alone on account of his position as by far the most conspicuous figure in the Austrian iron trade but also on account of the fact that in his earlier days he was a resident of this country and is therefore more competent to judge than the ordinary globe trotter.—(Editor *The Iron Age*.)

I was obliged to give this little historical review, because it has to serve as a foundation for my real subject, to which I am at last coming—viz., the causes of the development of industry in the United States. But I will not speak of those causes which are obvious—*e.g.*, the wealth and abundance of coal, ores, fertile land, immigration, the large rivers, &c. I desire to speak of those causes which are connected with the historical education of the American people. I believe each of us is the product of his education, of the education of his fathers, and of the surroundings among which he grew up. And so I believe that a nation possesses those qualities which it has acquired owing to its history and education.

Two hard centuries taught the American nation diligence, perseverance and great frugality, imbued it with healthy—if you like, relentless—egotism, a desire for education, a speculative spirit and a great love of liberty. Perhaps not all of you will agree with me when I say that those are qualities needed by a people for its industrial development just as much by the manufacturer himself. Perhaps you will say: Diligence, perseverance, frugality, yes! But egotism, a speculative spirit, desire for education, love of liberty—no! I shall try to show you that nevertheless these qualities are connected with the development of industry.

Circumstances like those amid which the American nation grew up are unfavorable for the creation of sentimentalists, and the Yankee singing mandolin in hand by moonlight is something little corresponding to reality. Yet I do not mean to say that the American has not his heart in the right place; but the struggle for existence has created in the American egotism, that impulse to rely on his own strength, undeviatingly to labor for the improvement of his own lot, and to consider the attainment of that end perfectly sufficient, an impulse not equally developed in all individuals and all nations.

The greed of the English, who are not wanting in egotism, also did its part. The English actually went so far as to forbid the sending of machinery or drawings or descriptions of machinery to America to prevent the development of industry in the colonies!

Protection.

It is to this conflict of interests that the American protectionist system owes its origin. The Americans could not see why they should put their English cousins in the way of earning money. Already during the War of Independence they pledged their word not to get goods from England, and in the act of constitution Congress was empowered to impose duties for the benefit of home trade. Since that time—that is, for a whole century—the protectionist system, which was opposed by the agriculturists, though it has never been in real danger, and which has so mightily promoted the development of industry, has been in force. It was also antagonism to the English which founded and fostered the protectionist system in France.

In our youth all of us were free traders, are so still to some extent. That has to do with our education, which was under German influence. The Germans had the peculiarity of not thinking of their own interests, but of enthusiastically admiring other nations, including the English; also many German rulers were related to the English royal family. Prince Bismarck was the first to break with that principle in Germany. He could not see why Germans should buy English goods which they themselves could make, even though they cost more; and to day it is interesting, instructing and amusing to read the speeches then made in Parliament, and to see what opposition Bismarck had to overcome when he inaugurated the Protective system in Germany. Professors and national economists prophesied that the protective duties could not remain permanently, that they would ruin commerce. But he who knew the German industry and commerce of that day and knows those of the present must come to the conclusion that even professors of political economy may err. [Laughter.]

Education.

In their struggle with nature and the English, who were so far ahead, the Americans soon recognized the necessity of having science and knowledge as allies. As early as the year 1640, it may be said when the colonies were still in leading strings, the Legislature of Massachusetts issued an edict requiring every settlement to have school kept for six months in every year, and to have the children taught not only the three R's, but also geography. In 1645 this law was renewed with a threat for those parents who neglected to have their children taught. This law was successively adopted by most of the colonies. I believe at that time there was no talk of compulsory education in Europe. The well-known American statesman, Daniel Webster, who was Secretary of State for Home Affairs, in 1822 in a celebrated speech made the assertion that the question as to whether the Americans would retain their liberty or not depended simply on whether the nation persevered in its endeavor to extend its education. [Cheers.]

I do not think that in Europe in 1820 there was any statesman who would have adopted that standpoint. In the American Constitution is a clause prescribing that as soon as a settlement is made a certain portion of the land shall be reserved as the property of the school: and the result is that to-day the public elementary schools, of which there are 325,000 to 350,000 with 500,000 teachers, possess a fortune of $400,000,000—*i.e.*, nearly 1,000,000,000 florins. As long ago as 1850 education, as well as books and other educational materials, was free in the primary schools in many States.

Germany and the United States more than all other countries and more perfectly than any others have cared for the education of the people. In regard to popular education the United States is but little behind Germany probably, for although in the West naturally there are districts where education is not up to the standard of the age, because the people are so scattered and so poor, yet in the East not only need not popular education shun comparison with that in any other country, but it might often serve as a pattern; besides that it must not be forgotten that for America the school is not the only means of education. A further one is to be found in the 12,000 weeklies and 2500 monthlies, which, as can be seen by observation, are diligently read and promote culture and learning.

The educated workman in Germany and the United States is one of the chief pillars of his country's industry. All of us who have had to do with industry know how to value the educated workman, not only because he does work the uneducated one could not do, but also because, in his endeavor to improve his lot, he directly and indirectly compels his employer to perfect his methods of work. I assert that the uneducated peasant, who himself has learned nothing and does not have his son taught anything, who humbly stands hat in hand in the presence of the land owner, the parson or the Government official, is the greatest hindrance to the progress of industry [expressions of assent], because he is the point of departure and the greatest support for all efforts, which, partly consciously and partly unconsciously, hinder all progress.

Speculation.

I have referred to egotism and a desire for education as qualities of the American nation. But it owes its evolution to another gift, without which, in my opinion, a manufacturer is only a bungler. The American has a pronounced love of speculating. I do not mean to speak of stock exchange speculators; there are speculators in the better sense of the term. Let me enter into particulars. There are people who imagine a manufacturer to be a man furnished with a certain quantity of technical and mercantile knowledge, who, with the capital he has inherited, builds a factory, and then diligently, quietly and comfortably runs it. I believe there is a considerable amount of error in that conception. The manufacturer must venture; must, if the moment require it, venture everything on one card, even at the risk of not reaping the fruits he hoped for, of losing his stake and being obliged to start in life again. Industry offers no field for quiet, constant, easy going work; the less so the more developed it is, the more widely it is spread and the more it is dependent on the world markets. The wants of single men and single nations are uncertain and move by fits and starts, and the conditions on which success or failure depends in industry are just so and equally little to be foreseen. Who will presume he can foresee what the position of any article will be in the market in the next ten years; what the harvest will be like in America, Russia, Asia; what quantity of cotton or wool will be brought into market; what new inventions will create new wants and make old ones disappear; how many ships will be at sea; whether there will be peace or war? Nobody! And yet the question of the success of industry depends on all these things. In old times business knew nothing of these dangers; it was intended to supply the wants of its own immediate neighborhood and they could be estimated.

Industry knows no finality and cannot reckon with any finality. The manufacturer must not only be a mechanician and merchant, and as such able to follow the fluctua-

tions of the market for his productions, but he must perceive the demand for new articles in time, must recognize the value of new methods of working and also have the courage to adopt them; in a word he must take into consideration a whole series of factors which are not definable, not tangible and often dependent on chance; he must be also a speculator.

This word speculator is offensive to many ears, not alone to the ears of those circles for which mankind begins with the rank of a baron, but also for those circles whose course and habits of life presuppose their having a wide horizon in material things. The word speculation is offensive to the ears of those people who have no occasion to risk anything and therefore, I will not say despise the speculator, but do not consider him their equal. The word speculator is offensive to the ears of those who cannot venture anything, win anything, and therefore look on the unexpected gain which another has as obtained by improper means. The word speculator offends the ears of those unaccustomed to handle great sums of money and quantities of goods, and who consequently do not know the fall and rise of price in the market, do not know the consequences of such fluctuations, and look with distrust and disgust at such persons as are compelled to carry on industry on a grand scale and to deal in the world market. I understand the feeling and have not come here to glorify the speculator; I shall not make any pyrotechnic show in honor of speculation. But one must have the courage to say: A man lacking the speculative mind, a manufacturer without the capacity for taking into consideration besides the visible moments also the uncertain ones lying in the future, and of coming to corresponding decisions, even at the risk of having events turn out quite differently, is unfitted for the management of an industrial establishment.

This faculty, as well as the courage to exercise it, is not innate, like, say, a talent for music, but must be acquired by diligence and practice. The American nation possesses that faculty, and to a large extent owes it to the influence of historical events. While the Americans for two centuries were toiling to turn the primeval forest into arable land and to create a dwelling place for men who wanted to work untrammeled by religious and other persecutions, they little thought that thus they were opening the door for a new migration of the peoples. From 1820 till 1890 more than 18,500,000 immigrants entered the United States. Only think, gentlemen, what a change that could not but produce in the utilization of all that was above and below ground. A piece of land valueless to day may in the course of a few years make its owner a millionaire, because the settlements have become a town. This rapid change in all values, like the undreamed of demand for wares of all sorts, railways, houses, &c., on the part of a population increasing so quickly, could not but wake the speculative faculty of a nation, which would not allow itself to be prevented from working for the promotion of its material interests. Each separate branch of industry wished to be prepared to satisfy needs which might yet arise, and each manufacturer wanted to be the first to pocket the expected profit.

Business Crises.

But crisis follows speculation like shadow follows light, and the intenser the one the darker the other. That is the reason why there is no country in which crises are so frequent and so serious as in America; I should well-nigh say that the crisis is permanent in America. The yearly average of failures in the States is 13,000, with $150,000,000 of unmet liabilities; in Germany, 6000, with $50,000,000. I have already compared the census of 1880 with that of 1890 to show that in those ten years the production in the different industries was doubled; in some cases trebled. From the same comparison it can be seen that the number of factories in the same industry materially decreased, sometimes by half.

Let me give some examples. In the year 1880 in the States there were 1900 agricultural implement factories, in the year 1890 only 900; consequently 1000 factories disappeared. Most certainly the great majority were small ones. But at all events you will admit that the disappearance of 1000 establishments in one branch of industry within ten years would have produced a most serious crisis in any other country. The number of flour mills in those ten years fell from 24,000 to 18,000, so 6000 mills were shut up. The breweries and other establishments for the manufacture of alcoholic liquors within that same period decreased from 3100 to 1900. In 1880 there were 700 paper mills, in 1890 only 560 (a diminution of 140), whereas the value of the paper made increased from $55,000,000 to $80,000,000. But as paper cannot like brandy be made on a small scale, actually 140 large concerns in a flourishing branch of manufacture disappeared in ten years.

This phenomenon, whose existence I could prove by many more examples did I not fear to tire you with figures, shows that while, on the one hand, a number of factories of the same kind had to give up work, on the other hand a number of new ones were started, and already existing ones adopted improved machinery; were that not so it would be impossible for the value of the output to increase despite the diminution in the number of factories. This phenomenon proves further that each branch of industry, urged on by a restless speculation, is permanently in a state of crisis, in which as many fortunes are lost as manufacturers compelled to stop work, and new fortunes are made in the same measure as the production in the surviving of newly established factories increases.

For the individual who has lost his fortune these crises are sad and painful enough; but as facts prove they are very good for the development of industry as a whole, and particularly good for the training of workmen and engineers. It is often asserted, and believed by the Americans themselves, that they have special technical talent; I do not believe it. In America the average man has far more opportunity for exercising his mechanical talent owing to the rapidity with which small old establishments disappear and larger, better equipped ones arise. Of engineers and merchants you will prefer him who has repeatedly had opportunity to gain experience in one estal lishment, and to make use of it when starting new establishments in the same branch. Every engineer would rejoice to be called on at the inauguration of a new establishment to carry out those improvements which in the small old establishment he had recognized as desirable, but which the circumstances prevented his carrying out. In such a case a man can accomplish and learn somethin g.

The American engineer and artisan more frequently than their European colleagues have an opportunity of seeing the disappearance of old institutions and of helping in the establishment of new undertakings. So American industry owes to the much abused and feared crisis, which again is a consequence of speculation, its invaluable staff of experienced engineers, merchants and well schooled workmen, and every branch of industry the much praised perfection of its machinery. It is this last which enables American industry in many cases successfully to compete with European industry, despite high wages.

Economic Liberty.

Such conditions arise, however, only in connection with the completest economic liberty; only there where the ever protecting and ever regulating hand is lacking, the hand which has to protect the immature people from harm, to prevent crises from arising, and which endeavors by times to crush the very germs of unsound undertakings. Indeed the American's speculative faculty would be of little use to him had he not the liberty to indulge it. He does enjoy the liberty to risk new enterprises, whether it be alone or with others as a joint stock company.

The joint stock company in America, like in all industrial countries, is far the most prevalent form of industrial undertaking. It is the only way in which a small capitalist can take part in industry, and it affords the large capitalist an opportunity to join a greater number of undertakings, thus securing himself against the risk of a single one. In the United States the legislation makes no distinction between the one form and the other in which capital participates in undertakings, all the same to what department they belong, and equally little when the nominal value of the shares is not more than a dollar, which frequently is the case.

The question of how morals fare with this liberty, and how far the public are the victims of unprincipled fleecing, involuntarily suggests itself to us. The numerous crises and the number of failures show there is a good deal of both sanguine speculation and cheating mixed up with the starting of new joint stock companies; but if we take into consideration the fact that there are many thousands of joint stock companies (the number of railway companies alone amounts nearly to 1800), and if with one's own eyes one sees the great development of industry, one must come to the conclusion that in America liberty is not nearly so much abused as is assumed in many circles. A people unaccustomed in purely business matters to expect State protection draws wholesome lessons from these crises, is made prudent by loss and learns the necessity of looking after its business itself. Most people have a good look at a man before intrusting him with their money.

However that may be, and however many enterprises are started which have no right to exist, the American nation as a whole has no reason to regret the great liberty which it has till now preserved for itself. The railways will serve as an example.

I have already said that the United States has a network of railways 300,000 km. long. Among them are lines with a total length of 50,000 km., with a capital of $2,000,000,000, which pay no interest at all, and there are further 50,000 km. which bring in a minimum of profit. According to our notions such railways are upon a dishonest basis, and the money invested in them by capitalists, and which, at least for the present, is lost for them, amounts to thousands of millions of dollars. But the rail-

ways as such still exist and are serviceable to agriculture, industry and commerce, which owe to them a great part of their present development. But that by no means exhausts the utility of these lines to the people in general. Through the wild competition of the railways the means of transportation have made progress of which we know nothing. Trucks usually have a freighting capacity of 300 to 500 quintals and the carriage of goods in bulk amounts to 0.25 cents (0.6 kr.) and less per ton an English mile. For the journey from Prague to Vienna that equals a rate we cannot conceive—namely, 13 kr. per 100 kgs.

In Europe the State would have taken care that gullibility or confidence should not be taken advantage of in such measure; and for gullibility and confidence such care is very pleasant. On the other hand, however, in America industry and agriculture, and consequently prosperity, find the railways an assistance which they do not find in Europe. During the last few decades also the German Empire has enjoyed great liberty in economic matters, which also it owes to Prince Bismarck, who certainly was a Conservative; yet he not only allowed the greatest liberty in economic questions, but also obstinately defended it. We learn from a letter of his to Emperor William in the year 1877 how he resisted "the shoes for which we are measured at the green table of the legislature," and how he fought with "ministers and with councillors, whose bills are for the most part the work of mere jurists and do harm."

Somebody once said that the Danube flows in the wrong direction for Austrian industry; its course should properly be from east to west. That is a thing no one can alter; but education and liberty can be spread everywhere at slight expense. It was my object to show that education and liberty are the chief causes of the development of industry in the United States, and that the sacrifices the American nation has made for them have been amply rewarded.

The Union Malleable Iron Company.

A new plant will be built at East Moline, Ill., by the Union Malleable Iron Company of Moline. It will be of large size, with an annual capacity of 10,000 tons of malleable castings. The following description of the new establishment has been furnished by the company:

The ground to be occupied has an area of 522 x 900 feet, and it is situated between the main lines of the C., R. I. & P. and C., B. & Q. A 15-foot roadbed for switches branches off and runs parallel with the main tracks of the two roads. On the extreme west of the buildings is storage room for pig iron, coal yard, &c. Then comes the foundry, with north and south dimensions of 408 feet, and east and west dimensions of 150 feet. A space of 274 feet is left on the south for a future extension of the foundry if necessary.

The foundry is connected with the hard mill room by 25-foot gangways. The mill room will be 50 x 80 feet in dimensions, and directly adjoins the assorting room, 40 x 50 feet in dimensions. Another 25-foot gangway leads to the annealing room, further east, which has dimensions of 100 x 225 feet. From the annealing room the process of manufacture leads to the soft mill room, 50 x 50 feet, just north of and adjoining the annealing room.

Castings which need no machine work will be taken directly to the shipping room, to the northeast side of the plant, and alongside the switch track of the C., B. & Q. This shipping room is 60 x 204 feet in dimensions. Castings which need machine work will be transferred from the soft assorting room to the machine and blacksmith room, between the shipping and annealing rooms, with dimensions of 50 x 128 feet. The carpenter and pattern shops will be located in a two-story building, 50 x 80 feet, and situated just north of the hard mill. The pattern shop will be confined to the second story of the building, and on the ground floor adjoining the building is a 40 x 50 foot extension for a pattern vault.

The core room is located south of the hard mill, and it is to have dimensions of 50 x 80 feet, with a space of 58 feet for future extension. South of the core room are spaces of 40 x 50 and 50 x 80 feet for future extensions of the hard assorting and hard mill, respectively. Then comes the engine room with dimensions of 50 x 50 feet, and adjoining is the boiler room with like dimensions.

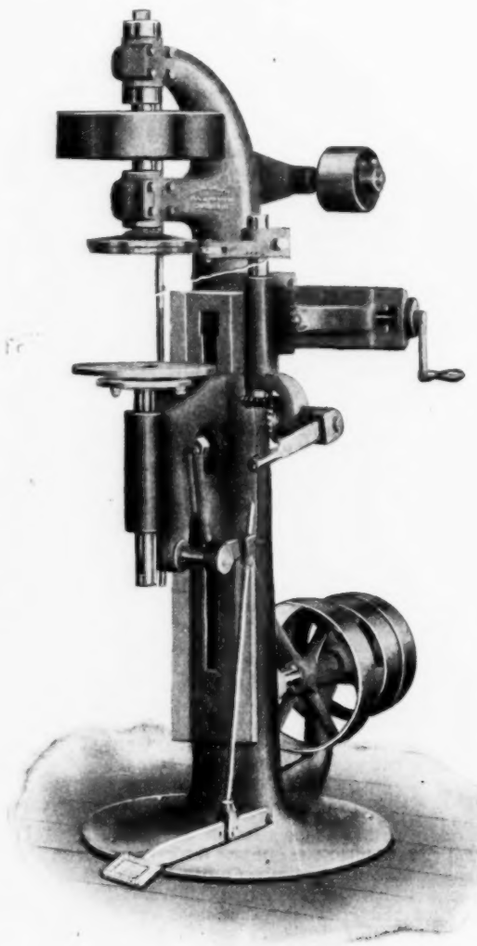
The main office building is to be located just east of the annealing room. It will be two stories in hight, with dimensions of 50 x 60 feet. The timekeeper's and superintendent's office, 30 x 60 feet, is just south of the office, and further on space has been left for a 50 x 50 foot clothes and wash room for the men, and a 50 x 50 foot bathroom, also for the employees. These last two innovations have not been altogether decided on yet, but Manager F. W. Gould says they will surely be built if the company have enough money left. A 50 x 50 foot barn is located on the extreme southeast corner of the plant.

The company propose to do their annealing by gas, and a 30 x 186 foot space is set apart on the south end for gas producers.

The plans have been prepared by C. H. Pope (who is to be superintendent of construction of the new plant), C. C. Heald, superintendent of the works and a St. Louis malleable expert.

Upright Crimper and Double Seamer.

The machine here illustrated is the largest size of a line of upright crimpers and double seamers brought out by Rudolphi & Krummel, 96 to 100 North Clinton street, Chicago. The machines as built regularly can be used for crimping and double seaming all styles of round cans, cups, buckets, pails, &c. They are modified quite frequently to suit special purposes, as, for instance, a sliding table can be fitted for work requiring an inside chuck or roll, or special attachments can be made



UPRIGHT CRIMPER AND DOUBLE SEAMER.

for double seaming bottoms without a recess. For curling or false wiring the edges of pails and buckets the side brackets are dispensed with and the curling chucks are fastened to the upper spindle, the necessary pressure for doing the curling being applied to the lower spindle by means of the treadle. The lower spindle runs in a regular cup step bearing, thus always retaining sufficient oil for lubrication. The adjustment for different hights of cans is obtained on the larger sizes by an adjustment of the apron, this adjustment being obtained by means of a screw on the left hand side of the machine, thus always keeping the apron suspended while being adjusted. The lever for operating the rolls is arranged to swing vertically, this motion being less tiresome than the usual horizontal one. Depressing the handle completes the seam as the first roll passes by the seam. The handle is returned to its upper position by means of a spring. The distances between the centers of the driving pulleys and idler pulleys are greater than usual, thus reducing the wear on the driving belt to a minimum. They are built in five sizes, from 250 to 1500 pounds in weight, and for cans ranging from 5 inches to 21 inches in diameter.

Lake Iron Ore Matters.

DULUTH, March 25, 1899.—Prices set for ores by the February meeting of the old range pool do not seem to have any very marked effect on the situation, and there are small sales being constantly made at advanced quotations. The figures are not very much higher, but they show that anything in the shape of iron need not go begging for a purchaser this season. Inferior ores are selling at better prices than high grade ores brought at the early scramble, and the tendency is steadily, though conservatively, upward. There could be a considerable further advance in ores and the margin between ores and present prices for finished products for early delivery remains ample.

The Sauntry Purchase.

The American Steel & Wire Company have bought the Sauntry exploration on the Mesaba Range for $700,000, and paid the cash. The Sauntry cost its late owners almost nothing, that is, only a few hundred dollars, and most of this in taxes. It was owned by Musser, Sauntry & Clarke, and fell to them after the former owners dropped it as valueless, when they had cut off the pine that covered the surface. There is an ore body of anywhere from 25,000,000 to 40,000,000 tons, of which a small portion is Bessemer. The fact that it is a stripping proposition, and the last one of the kind for sale on the Mesaba, probably had a good deal to do with the sale. The property had been explored and dropped by the Minnesota Iron Company and had been refused by the Consolidated. Most of its ore will probably run from 58 to 60 per cent. iron and rather high in phosphorus, though there are said to be several million tons of Bessemer on the large tract. There is a good deal of manganiferous ore, too low to be of value for its manganese, and the best of the ore in the mine lies in the bed of a stream of considerable size. Additional developments by the American Steel & Wire Company are expected before long. Several sales of mineral lands on the Mesaba and other ranges have been made of late, and others are pending. An 80-acre tract in 23, 58-20 has just sold for $130,000, and the last bunch of stock in the Security Land and Exploration has changed hands at the offered price of 300 per cent.

Labor Matters.

The Ishpeming branch of the Mineral Workers' Union has sent out notices that indicate the possibility of labor troubles the coming summer. They will endeavor to round up all mine workers in the association fold, and offer inducements for early enrollment. It is about time for strikes; the men are getting better wages than in many years, and there is plenty of employment for all, and it is just such conditions that bring about the bitterest strikes. The only time when miners will not entertain the thought of striking is when they are getting $1 a day or less, and when there are more men than jobs. Most of them cannot stand prosperity. Strikes this season would be very serious matters.

Late Opening of Navigation.

There seems to be some concern in Cleveland over the probable unusual freezing of stock piles at, mines on account of cold weather and the effect this may have on early shipments. Stock pile loaders at the mines quite often work into frost all summer, at least till July and August, and the conditions this year will probably be no different from those usual. Navigation, when it does open, will open with a rush, as all long headed mine managers will try and get the greatest possible amount of ore down early. Docks, mines and roads will all be phenomenally busy from the start. Navigation, however, does not promise an early beginning. There are 36 inches of clear ice in the Lake Superior harbors and more than for years in the connecting channels and ends of the lakes. This, with large bodies of snow in the country surrounding the lakes, means a late opening, and it is doubtful if there will be any vessels in Lake Superior much before May 1. Still the modern vessels will go through ice that would have been impenetrable five years ago.

Negotiations are pending for the sale of the Zenith Transportation Company's vessels, five 7500-ton ships, to the Federal Steel interests for use in handling iron ore. If the deal is closed A. B. Wolvin, managing owner of the line, will enter Mr. Hill's employ in the capacity of organizer and manager of a great trans-Pacific fleet to operate from Seattle to the Orient in connection with the Great Northern road.

Lake Fleets.

There will be this year on the lakes the following ships controlled by iron ore interests and used chiefly in carrying ores; Bessemer fleet, 24 ships; Minnesota fleet, 18 ships, or, with the Wolvin boats, 25 large ships; American Steel Barge fleet, 30 ships; Interlake fleet, 3 ships; Huron fleet, 2 ships, both these latter being associated with the Minnesota Company; Cleveland Cliffs fleet, 6 ships; Mutual fleet, 4 ships. The ore trade demands, of course, many ships in addition to these, notably such as the big fleets of the Davidson and Wilson lines, and many smaller lines.

Captain Joseph Sellwood, who has been intimately connected with the Minnesota Iron Company since the early days of the company, will leave it in a short time and carry on an individual business. Captain Sellwood has the reputation of knowing as much of lake mining conditions as any man in the West, having been engaged in mining on the copper and iron ranges for 35 years. He was very prominent on the Gogebic in its early days and came from there to the Minnesota Company, where he brought the cost of mining ore to a point hitherto unheard of in the Chandler Mine. To-day every property in the possession of the Federal Steel Company in Minnesota, with the single exception of its first purchases at Tower, has been bought under the advice and at the solicitation of Captain Sellwood. He is regarded as one of the most expert judges of mines in this country. He has collected a group of properties around the Brotherton on the Gogebic, and will operate them, but may be actively employed in another and most important capacity.

Queen group, Negaunee, has resumed operations, with 130 men, and will increase later. The pending transfer to the Carnegie interests has not yet been closed. Salisbury mine, Ishpeming, has been metamorphosed lately. Hoisting plant and office have been installed in new buildings and shops have all been moved from ground that was in danger of caving. Ore is being hoisted rapidly through the new shaft. Chapin mine, Iron Mountain, is employing 900 men and is hoisting an immense amount of its standard ore. The management has now completed a work of years, the changing of the system of mining to the caving, and the taking of ore from pillars left under the old system in the upper seven levels is now over.

Hjalmar Lundbohm of the Swedish Government geological survey and Axle Bellwick, chief engineer of the Gellivare iron mines, 80 miles north of the Arctic Circle, have been on the Lake Ranges the past few weeks, going from the Chapin to the Chandler, and Mesaba. Needless to say they saw and heard a good many things to elicit surprise, not the least of which was the statement that 700,000 tons of ore were hoisted from a depth of 800 feet through one shaft in the Chapin in a year. Mesaba deposits and methods and cost sheets of such mines as Fayal and Chandler were also eye-openers. Mr. Lundbohm told of a deposit of magnetite 120 miles north of the Arctic Circle that had been tested by drills by his government and found to contain 230,000,000 tons of ore above the level of a proposed railway. This ore is crystalline and contains as high as 6 per cent. of phosphorus, and is valuable for basic plants.

The Thomas Furnace Company, Niles, Ohio, that have recently sold out to the Steel & Wire Company, have closed an option for the 120-ton furnace at Duluth, and will enlarge and blow it in. It would not be surprising if some experiments in the use of low grade Minnesota ores were carried on there, and if plants for using part of the product of the furnace should be installed soon.

D. E. W.

A Record Breaking High Duty Pumping Engine.

The Lake Erie Engineering Works, Buffalo, N. Y., recently completed the installation of a large pumping engine for the Fourteenth street station of the city of Chicago which has made a wonderful showing. The contract price for the engine was $85,000, on a guarantee that it would pump 30,000,000 gallons in 24 hours, developing 135,000,000 foot pounds per 1000 pounds of dry steam. The contract, however, provided that a 24 hours' test should be made before the acceptance of the engine, and that the city would give a bonus of $1000 for each 1,000,000 foot pounds developed above that stated in the contract, a similar reduction or rejection to be made if the efficiency fell under. The test was made on the 16th inst. under the supervision of John C. McMynn of Robert W. Hunt & Co., acting for the city; Newcomb Corbin of Buffalo for the engine builders, and F. W. Catlin of Minneapolis, former city engineer, as the third man. The official report of the testing board has not yet been made public, but it is known that over 150,000,000 foot pounds was developed, and that while it was kept pumping at the rate of about 33,000,000 gallons it was shown to be easily capable of pumping 35,000,000 gallons. The builders will receive a handsome bonus, running considerably above $15,000, and a new standard has been made for future specifications in pumping machinery for Chicago. City Engineer Ericsson says that the new engine is a model of its class. It is a vertical triple expansion engine.

The Mannesmann Projectile Contract.

WASHINGTON, March 28, 1899.—In view of the various reports concerning the status of the contract awarded to the Mannesmann Tube Company for $500,000 worth of projectiles, the deliveries to be made between October 6, 1898, and March 18, 1899, Acting Secretary of War Meiklejohn has caused an authoritative statement to be made to the correspondent of *The Iron Age* by an official of the Ordnance Bureau of the War Department. The contract with the Mannesmann Company has been annulled under circumstances which seem to justify fully the prediction made at the time of the award by representatives of the American manufacturers who protested against the granting of contracts involving large quantities of munitions of war to companies without plants or adequate facilities for meeting the conditions of the contracts.

Readers of *The Iron Age* will remember that the War Department in July last awarded to the Mannesmann Tube Company a contract calling for $500,174 worth of shells of 8, 10 and 12 inch calibers for coast defense guns. At the same time awards aggregating nearly $1,300,000 were made to the Midvale Steel Company, the Carpenter Steel Company, the Firth-Sterling Company, the Taylor Iron & Steel Company and the Benj. Atha & Illingsworth Company. The official correspondence in the case shows that the award was made to the Mannesmann Company in face of the protest of the officials of the Ordnance Bureau, but it appears that the Secretary of War and his immediate advisers were impressed with the importance of establishing a plant in the United States capable of producing the character of shells which it was understood had been tested with complete success and purchased in large quantities by the leading European governments. The officials of the Ordnance Bureau based their objections to the award upon the fact that the material was needed at the earliest practicable date and that the Mannesmann Company would not only require to build a plant in this country, but would be obliged to pass through the preliminary experimental stages before a reliable product could be turned out that would meet the prescribed tests. Several prominent public men, including at least two United States Senators, had become interested in seeing what promised to be a large industry established in the United States which would probably furnish employment for a considerable number of well paid operatives, and these gentlemen used their good offices to induce Secretary Alger to award to the Mannesmann Tube Company a contract sufficiently large to justify the construction of a plant. Finally, after much correspondence and a series of interviews that consumed much time, a contract was prepared in duplicate dated July 29, 1898, between the Secretary of War and the Mannesmann Tube Company, under the name of the Titan Company of Cook County, Ill., under the terms of which the company agreed to manufacture 600 8-inch shot, 600 8-inch shell, 500 10-inch shot, 500 10-inch shell, 200 12-inch shot and 219 12-inch shell, the consideration being $500,174.05. Soon after the letting of this contract Assistant Secretary Meiklejohn in a statement to the correspondent of *The Iron Age* described the steps taken by the Mannesmann Company to establish a plant, as follows:

"Since the letting of the contract to the Mannesmann Company the firm have acquired a very large tract of land at Pullman, Ill., adjacent to the plant of the Pullman Palace Car Company. The plans of their works have been submitted to the Department, and they have given the customary bond for a faithful performance of the contract within the prescribed period. The Department understands that the company have contracts with the Pullman Company for certain steel material, and every evidence has been given that an important industry has been established in the United States, which will employ American labor and a large amount of American material. I feel personally that the Department is to be congratulated upon the establishment of this industry, and I can say very positively that every step that has been taken in the matter by the Department has been solely with reference to the public interest."

In view of the foregoing it was generally understood that the contract between the Secretary of War and the Mannesmann Tube Company had been promptly signed by both parties and that the company were liable under their bond for any failures to deliver the projectiles in accordance with the schedule which formed a part of the contract. It is a fact, however, that the contract, though formally awarded to the Mannesmann Company, was never signed by the representatives of that company, and was annulled under circumstances showing clearly that the company had entered upon an undertaking which they were not in a position to carry out. The facts in connection with the forfeiture of the contract were thus described to the correspondent of *The Iron Age* by the ordnance official above referred to:

"The contract for the material awarded to the Mannesmann Tube Company was forwarded in duplicate to be executed in due form. Several weeks passed and the contracts were not returned to us. In the meantime the officials of the Bureau had become tolerably well convinced that the company relied upon securing labor abroad and were not advised of the scope of the contract labor laws, which would prevent the importation of such skilled laborers as might understand the processes employed by the company in their European plant. Some difficulty was also experienced in making it clear to the representatives of the company that the Department would be obliged to require a more rigid ballistic test of their projectiles than those furnished by companies permitting the usual open inspection of their plants. The reason for this was the fact that the Mannesmann Company proposed to use a secret process, and as the Department's representatives could not form so reliable a judgment of the quality of the projectiles in the course of their manufacture it became necessary to submit a larger proportion of them to an actual test. This necessarily involved the use and destruction of a larger number of plates, so that although the Mannesmann Tube Company were permitted to reduce their bid to the price of the so-called American syndicate, the cost of their output to the Department would still be somewhat higher because of the extra expense incident to the tests referred to.

"During the period following the awarding of this contract to the Mannesmann Tube Company the American manufacturers were working to the limit of their capacity in filling contracts awarded to them, and therefore the Secretary of War naturally reasoned that even if the Mannesmann Company failed to meet the requirements of their contract the Government would not be the loser, for the award could then be withdrawn and divided up among the American manufacturers.

"After a lapse of considerable time the Mannesmann Tube Company, instead of returning the contracts forwarded to them, applied for an extension of time within which to make deliveries. The Department replied that as the agreement had not been signed no contract existed, and consequently it could not be extended. The company therefore were requested to forward the signed contracts as speedily as possible. This was not done, but after further delay a representative of the company brought the contracts to the Bureau and surrendered them, whereupon the award was annulled and the amount involved has since been allotted to American manufacturers, including the Midvale Steel Company, who received $300,000 as lowest bidders; the Carpenter Steel Company receiving $110,000, and the Wheeler-Sterling Company receiving $110,000."

It is understood that the representatives of the Mannesmann Tube Company made strenuous efforts to secure from capitalists and other manufacturers such cooperation as was necessary to the construction of a plant adequate to the production of projectiles and other forms of steel in large quantities, but were not able to make satisfactory arrangements in time to meet the requirements of their contract with the War Department. The Department officials believe that the company have acted in good faith throughout, but that the difficulties incident to the construction and fitting up of a large steel plant in a very short space of time were greatly underestimated. W. L. C.

Among the new positions created by the Naval Personnel law is that of warrant machinist. Arrangements are now being completed for the admission into the navy of 100 of these warrant officers. Examinations will be held at all the principal yards in about six weeks' time. The examination will be competitive, and will embrace these subjects: Handwriting, arithmetic, marine engines, marine boilers, auxiliary machinery, indicators and diagrams and working sketches. The preference will be given to men already in the navy, or who have at any time served in it, after which civilians will have an opportunity to appear for examination. The new positions are worth from $1200 to $1800 per annum, according to length of service. The machinists will have separate quarters on board ship from the enlisted men.

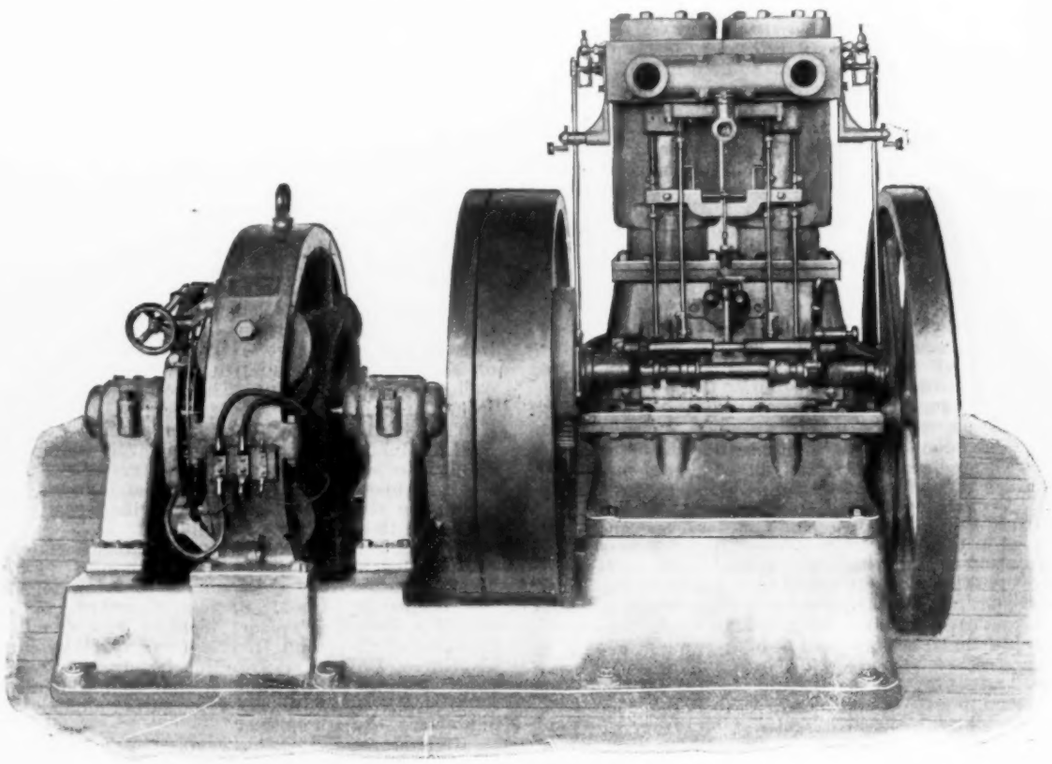
J. M. Staton, Bridge Inspector, and C. E. Powell, Supervisor of Buildings and Bridges, of the Chesapeake & Ohio Railroad, accompanied by four bridge engineers, arrived a few days ago at Newport News, Va., on a novel handcar, having made the trip on this new device all the way from Cincinnati. The car is operated by an engine, the motive power being gasoline and electricity combined. The engine is of the same pattern as that used in the naphtha launches on the lagoon at the World's Fair. This peculiar car was built at the Chesapeake & Ohio shops, under the supervision of Mr. Staton. Others, it is said, will be manufactured at once.

The Nash Direct Connected Gas Engine and Dynamo.

The Nash gas engine, which has been gradually developed during more than 12 years of service, for pumping and general power purposes, has of late years been improved in the direction of adapting it to the more severe requirements of electric lighting. The matter of design has been carefully considered, and also the selection of materials best suited for the purpose.

The vertical type of engine has been adopted on account of certain advantages, among which may be mentioned simplicity, compactness and ready accessibility for examination or adjustment. The vertical frame permits a higher speed without undue vibration, and the strains are transmitted directly to the foundation, where they are absorbed. There is also less friction and wear to the vertical piston, and the oil used to lubricate the piston works downwardly instead of collecting at the power end, where the hot gases are liable to carbonize the oil and cut the cylinder. It will be noted that the principal working parts, such as the crank shaft, main bearings, crank pins, connecting rods and lower end of trunk pistons, are inclosed by the frame, the lower part of which contains oil, which is being churned up by the action of the engine so as to lubricate all these working parts. These are thus protected from dust and grit and are readily accessible, when desired, through a large door in the side of the frame. These features secure cleanliness, better lubrication and economy in oil. The valve motion is all operated by a supplementary shaft, driven by spur gearing from the main shaft. The valves are all plain poppet valves, the most durable form for such service, and they are all operated by hardened cams mounted on the secondary shaft, which also carries the eccentric to operate the electric igniters. Steel forgings are used for the crank shafts and connecting rods, the main bearings and other boxes being made of phosphor bronze. All the working parts subject to heavy strain are liberally proportioned so as to run without undue heating or springing. Close attention to all these details is very important, since the working pressures in gas engines are much higher than in steam engines, and it is, in fact, mainly in these particulars that less carefully designed gas engines have failed when doing heavy work. The smaller engines, 3 to 10 horse-power, are single cylinder, while those of 15 horse-power and over are two-cylinder, or even three or four cylinder. Increasing the number of cylinders increases in like proportion the impulses on the crank shaft and gives greater regularity to the motion than where only one cylinder is used. Not only this, but the intensity of such impulses is reduced and the strains on the crank shafts and other working parts are lessened. This is highly important for electrical work and very desirable for pumping, as the lessened shock insures longer life to the pumps.

Regulation of speed in the cylinder is by the method of missed ignitions, the frequency of the ignitions possible per minute being varied by a sensitive governor, of either the shaft or fly ball type, which controls the gas valve so as either to admit or fail to admit gas for a power stroke according to the work being done at each instant. The engines operate on what is known as the four-stroke cycle and the regulation in speed is within 2 per cent from full load to no load, while at the same time economy in gas consumption is obtained. Repeated tests and experiments have shown that this method conduces best to high economy combined with the good working qualities and durability of the engines. All of these engines may be operated by city gas, gasoline gas, natural gas, producer gas or liquid gasoline used direct. For the latter fuel a simple attachment is provided and electric igniters are used. The attachment is simply a small pump, operated by the engine, and drawing its supply of gasoline from a storage tank placed outside underground and distant 30 feet from any insurable property. The pump delivers the gasoline to a small metal tank attached to the engine, whence it is fed to the cylinder as required through suitable feed valves. The gas valve controlled by the governor determines, however, when gasoline shall enter the cylinder, which it does in the form of gas which is formed by the action of the engine as it draws in air mingled with gasoline vapor in proper proportions. The Nash engine is built by the National Meter Company of 84 Chambers street, New York.



THE NASH DIRECT CONNECTED GAS ENGINE AND DYNAMO.

The "M. A. Hanna," a new steel steamship for the Cleveland Steamship Company, was successfully launched on Saturday at the Globe Shipyards, Cleveland, Ohio. The vessel is 430 feet in length, 50 feet beam and 22 feet deep. She will have a capacity of 5600 gross tons, and will be equipped with triple expansion engines, 63-inch diameter of cylinder with 42-inch stroke, and three Scotch boilers.

The Structural Iron Company, Baltimore, Md., have been awarded the contract for the structural steel for the new Naval Academy buildings at Annapolis, Md., amounting to 1500 tons. The company are now making important additions to their plant and equipment.

Canadian News.

Rainy River Iron Ores.

A very marked awakening of interest in the iron ore lands around Greenwater Lake in the Rainy River district is manifest. On the presumption that the Atikokan range will be a shipper of ore this year several claims have changed hands of late. Whether any of the properties will become shippers this year depends on whether construction work on the Ontario & Rainy River Railway will be pushed to the mines in time or not. Wm. Mackenzie, the capitalist who has the charter for that road and is building it, has, it is reported, become interested in iron deposits in the Greenwater Lake and Shebandowan districts. Port Arthur looks forward to a large iron traffic to the head of the lakes this season.

Aid to Iron Smelters.

An important amendment in the Ontario Mines Act is proposed by the Commissioner of Crown Lands. Before introducing it he stated that application had been made for Government aid to charcoal iron smelters. Section 11 of the present law provides for the payment by the Government of a bounty of $1 per ton upon all the pig iron product of Ontario ore smelted within the province. The sum expended in this way, however, is not to exceed $25,000 per annum, and the law provides for the arrangement only up to January 1, 1901. To this section the Commissioner now proposes to add the following provision:

"In the case of a blast furnace which uses charcoal made within the province as the sole fuel in smelting ores, payment may be made out of the fund of 50 cents per ton in the proportion of pig metal, the product of ores not mined in Ontario, subject to the condition that the following proportions of Ontario ores are smelted therewith: (a) In the first period of two years not less than 20 per cent. (b) After two years not less than 40 per cent. (c) After four years not less than 60 per cent. (d) After six years not less than 80 per cent. (e) After eight years not less than 100 per cent.

"And payment on the proportional product of Ontario ores shall be on the basis of $1 per ton of pig metal. But in case the proportion of Ontario ores smelted in a blast furnace shall in any year of a period fall below the percentages herein specified, there shall in such year be deducted from the payment of 50 cents per ton on the product of ores not mined in the province a percentage thereof equal to the percentage of deficiency in the requisite amount of Ontario ores, provided, however, that if the proportion of Ontario ores smelted in any year is less than 20 per cent. no payment shall be made out of the fund to such furnace for that year."

Thus the amendment makes some material changes. One appears to be that the time during which bounties may be paid is extended six years at least. Another is that a provincial bounty shall be paid on pig iron made in Ontario from imported ore. These changes will be of material advantage to the Deseronto Charcoal Iron Company, who began operations last autumn. That company brought in several cargoes of ore from the Lake Superior mines of the United States. Similar benefit will probably accrue to the Canada Iron Furnace Company when they begin to make the iron at Midland. That they will start operations there seems now a certainty, as the Government is evidently favorably inclined to the Midland bonus bill, there appearing to it to be conditions in the Midland case that make that case exceptional.

The Commissioner also proposes an amendment increasing the price of mining lands 50 cents per acre in most mining localities in Alguna, Thunder Bay, Rainy River and a portion of Nipissing district. At present a first discoverer of ores is entitled to a free grant of 40 acres if the vein or lode is five miles from the nearest known mine. It is now proposed to make the distance 10 miles.

Mineral Production in Ontario.

A statement given out by the Ontario Bureau of Mines shows that there were produced in the province in 1898 48,253 net tons of pig iron, valued at $530,789. In this production 130 men were employed, receiving in wages $61,476. Of nickel copper ore the produce was equivalent to 8,373,560 pounds of fine copper, valued at $268,000, and 5,567,690 pounds of fine nickel, valued at $514,220. Of gold there were produced 16,075 ounces, valued at $271,906.

A Steel Shipbuilding Scheme.

For months the dream of a big steel shipbuilding industry has been growing in the minds of the Nova Scotia people more or less slowly toward a reality. After the meeting of the Maritime Board of Trade, at which the prospects of Nova Scotia in this regard were forcefully set forth by Mr. Carmichael, the question was warmly taken up by the press of the province, which has never let it drop since. The formation of the Dominion Steel & Iron Company, the favorable treatment of that company by the provincial Government, which has agreed to remit half the royalty on the coal used by the company for eight years, has advanced the idea in the hopes of all, as one of the industries which the new company are expected to bring into existence is steel shipbuilding. But in another quarter progress is being made. At Dartmouth, N. Evans & Son enlarged the scale of their operations, and last summer had several very important repairing contracts. Now it is stated their ship repairing works there have been handed to a syndicate of English capitalists, who intend to make great improvements. A ship is to be built on the most modern lines in which large vessels can be handled. In addition a steel shipbuilding plant is contemplated. The capital, it is said, is already secured for this part of the enterprise. But the scheme is of still wider scope. It includes steel making as well. Whether the latter works are to be in Dartmouth or Halifax is not decided.

Trade Items.

Byron W. Goodsell of Chicago, B. Y. Coryell of Cheroning, Mich., and John McKay of Sault Ste. Marie, Ont., who are applying to the Ontario Government for a charter of incorporation for the Bruce Mines & Algoma Railway Company and for the Worthington & Onaping Company, are now in Ottawa endeavoring to secure from the Dominion Government a bonus of $3200 per mile for the first 10 miles of the former road and aid for the latter. The Bruce Mines & Algoma road is to be 50 miles long. An English company are preparing to put machinery in the old Bruce copper mines, these having been pumped out. The other road will pass near the McConnell, Sultana, Inez and Trilla Bell copper and nickel mines, through Levack township nickel range and on to Vermilion Valley gold mines.

Shurley & Dietrich, saw manufacturers, Galt, are adding buildings for the manufacture of iron bedsteads.

A contract has been given to the Canadian General Electric Company of Peterborough, Ont., for plant for the Ottawa machine shops and car works of the Booth railway system. There are two 3-phase generators, each of 200 horse-power and two motors of 130 horse-power each, and lighting plant. The power is to be furnished from the Chaudière.

The North Sydney *Herald* says that the Dominion Coal Company have purchased a large quantity of machinery to be operated by electricity.

The Abbott-Mitchell Iron & Steel Company are, according to Mayor Johnson of Belleville, erecting a plant of double the capacity contemplated.

Certain promoters are trying to effect a consolidation of the bicycle manufacturing companies of Canada. The companies it is thus sought to bring together are the following: Goold Bicycle Company, Brantford; Evans & Dodge, Windsor; Welland Vale Company, St. Catherines; Cleveland Bicycle Company, Toronto; Massey-Harris Company, Toronto; Gendron Bicycle Company, Toronto. It is claimed that $175,000 per annum could be saved in the cost of marketing alone if the companies were amalgamated.

Midland ratepayers have voted almost unanimously in favor of the by-law empowering the Town Council to carry out the agreement with the Canada Iron Furnace Company and pay that company a bonus of $50,000. Further, the bill enabling the town to carry out such an engagement has passed the Private Bills Committee of the Ontario Legislature. C. A. C. J.

The Iron and Steel Institute.—The annual meeting of the Iron and Steel Institute will be held in London on May 4 and 5, 1899. At this meeting the council will present their report for the year 1898. The president elect, Sir William Roberts Austen, will deliver his inaugural address, and papers promised by Prof. J. O. Arnold of Sheffield, H. Eauerman of London, E. Disdier of Bilbao, Jeremiah and A. P. Head of London, Baron H. von Jüptner of Donawitz, Austria, Prof. H. Louis of Newcastle-upon-Tyne, Bertrand S. Summers of Chicago and Professor Wiborgh of Stockholm are expected to be read and discussed. The autumn meeting of the Institute will be held in Manchester on August 15, 16, 17 and 18.

The second annual convention of the American Association for Testing Materials will be held in Pittsburgh August 15 and 16. The Engineers' Society of Western Pennsylvania has accorded the use of its assembly rooms on Penn avenue, where the annual meeting and executive sessions will be held.

At a meeting of the members of the Manufacturers' Association of the Mahoning and Shenango valleys, held in Youngstown last week, it was decided to increase wages of common labor employed at the mills in the two valleys from $1.15 to $1.25.

Manganese in the Acid Open Hearth Process.*

BY F. A. MATTHEWMAN.

The author hopes, in the following remarks, to present as completely as possible the principal effects of manganese in the open hearth process. The majority of the statements and deductions contained herein are founded principally on practical observations of weighed charges, and calculations made from the materials employed and the metal and slag at various stages of the process.

Composition of Steel Furnace Slags.

The manufacture of steel in the Siemens furnace has not formed the subject of many papers in this country. Although writers have dealt with modifications of the process, no paper professedly dealing with the reactions of the process has been published since that read before the Iron and Steel Institute by Arthur Willis of Landore in the year 1880.

If we assume the average content of our pig iron as silicon 2.75 per cent. and manganese 1.2 per cent., and that the scrap used contains 0.05 per cent. silicon and 0.5 per cent. manganese, we obtain the following as the theoretical production of slag by a charge containing 80 per cent. pig iron and 20 per cent. scrap (using 4 hundredweights ore per ton of steel, the ore containing the following impurities: Silica, 7 per cent.; lime, 5 per cent; oxide of manganese, 1¼ per cent.):

100-Cwt. Charge.

	Cwts.	
80 cwts. pig at 2.75 per cent. Si = 2.20 Si 20 cwts. scrap at 0.05 per cent. Si = 0.01 Si	2.21 = 4.62	silica.
Sand from 80 cwts. pig at 2 per cent.	1.60	silica.
Silica from 20 cwts. ore at 7 per cent.	1.40	silica.
Silica from hearth of furnace†	2.50	silica.
	10.12	silica.
Lime from 20 cwts. ore at 5 per cent.	1.00	lime.
MnO from 20 cwts. ore at 1¼ per cent. = 0.25 cwts. MnO 80 cwts. pig at 1.2 per cent. Mn = 0.96 cwts. (1.06 Mn = 1.37 MnO) 20 cwts. scrap at 0.5 per cent. Mn = 0.10 cwts.	1.62	MnO.
Assuming finished slag to contain 25 per cent. FeO, we obtain $\frac{12.74}{3} = 4.24$ cwts. FeO.	4.24	FeO.
Total weight of slag from 5 tons (100 cwts.) charge...	16.98	cwts.

†Campbell gives 1200 pounds as the average wear of the hearth in a series of 15 consecutive 10,000-pound charges of two-thirds scrap and one-third pig, and assumes that in the pig and ore process the wear would be 1800 pounds. In the above calculation it is taken at 1500 per 60,000 charged—*i. e.*, 2½ per 100.

Calculating the percentage composition of the slag thus produced, the following figures are obtained:

	Per cent.
Silica	59.6
Lime	5.9
Oxide of manganese	9.5
Oxide of iron	25.0

It will readily be seen that the composition of the slag of necessity varies greatly, according to the composition and quantity of the materials employed, as well as to the method of working, and it is not claimed that the analysis here given is an average, but it is given to show that the amount of oxide of manganese in the slags obtained in open hearth practice in Scotland approaches more nearly 10 per cent., while if the manganese in the pig iron exceeds the figure taken, or if the amount of slag is reduced, either by the presence of less silicon in the pig iron or the use of more scrap in the charge, the percentage quantity of oxide of manganese in the slag will be correspondingly increased, and may even exceed 10 per cent. Indeed, it is within the writer's knowledge that this figure has been exceeded—not in one charge or a selected few, but in regular practice, analysis of an average sample of 50 slags collected (not selected) during a period of two months' working in the year 1897 showing 13 per cent. MnO.

Manganese in the Ores.

From the above calculation it will be seen that the amount of slag produced in the working of an average charge is approximately equal to the amount of ore used. It therefore follows that the percentage of oxide of manganese in the slag which has been derived from the ore is the same as the percentage amount of this constituent contained in the ore. If the composition of an ore in other respects was satisfactory, and effected the oxidation of the impurities of the charge with the same economy, the higher percentage of oxide of manganese would not diminish its value to the steel maker; and in view of the probable scarcity of the ore, which has been almost the only one employed in the open hearth process for many years, the possibility of the economical use of other ores for the same purpose becomes a question of importance to all steel producers. Some manufacturers have used extensively, with results satisfactory to themselves, the rich ores of Cumberland and Elba.

*Abstract of paper read before the West of Scotland Iron and Steel Institute.

Manganese in the Pig Iron.

As we have already seen, this is of far greater importance than the percentage of oxide of manganese in the ore. Even with a charge initially comparatively low in manganese, the metal contributes by far the greater proportion of the manganous oxide in the slag. More than 5 per cent. of manganese is objectionable, not only on account of the delay it causes, but also on account of the destruction of the silica bottom. These objections constitute (along with the loss of yield due to the presence of so readily oxidizable an element) the objections of the steel makers to its presence to-day. It is the effect on the economic conduct of the process which is feared, and not the influence of the constituent on the finished product, the manganese in the initial charge being entirely removed by oxidation before the period of boiling commences.

It is an axiom which admits of no discussion that manganese causes delay, but it is somewhat difficult to differentiate between delays due to excess of silicon or manganese and those due to imperfect knowledge on the part of those responsible for the working of the furnace; but, as manganese is so readily oxidizable and is eliminated along with the silicon, it may be safely assumed that the delay it causes, if any, is inappreciable.

The reduced yield consequent upon high manganese is self evident. Although the presence of 0.5 per cent. of manganese in pig iron undoubtedly leads to a loss of ⅛ per cent. when such iron is converted into steel, it is by no means certain that the presence of a further 0.5 or 0.7 per cent. of this constituent increases the loss to a similar extent; on the contrary, although the manganese is completely removed during the melting stage from a charge with about 0.5 per cent., charges initially high retain a considerable portion when melted—Willis says "about 50 per cent. of the total amount, varying slightly with the temperature of the furnace," and the writer has in some instances obtained melted samples containing 1 per cent. of manganese (0.6 to 0.8 being of frequent occurrence), and as this is removed during the process of feeding with ore it is probably accompanied by a reduction of a similar amount of iron from the ore added, in which case the Scotch iron, with 1 or 1.2 per cent. of manganese, would cause no greater loss than the English iron containing only half that quantity.

Further, the oxide of manganese thus produced is capable of replacing ferrous oxide in the slag; and if this action is taken advantage of the amount of iron thus replaced must be credited to the excess of manganese, in which case the extra quantity would not only prove no objection but a source of distinct gain.

A further possibility which must not be lost sight of is the fact that just as silicon and manganese act as protective agents during the melting stage, protecting the iron itself from oxidation, so manganese may (being more readily oxidized than silicon) protect this latter element to some extent, and allowance would then require to be made for the iron which would be reduced from the ore by the silicon thus saved from atmospheric oxidation during the melting stage. But as the amount of iron reduced from the ore falls considerably below the calculated theoretical quantity which should in this way be added to the charge, and as the furnacemen, from deficiency of heat or other cause, may delay commencing to feed, thus causing a loss of manganese by the oxidizing action of the flame, we may conclude that, whereas the presence of 1.2 per cent. of manganese in pig iron possibly causes no more loss than 0.5 or 0.6 per cent., any further increase would tend to waste.

Oxide of manganese, undoubtedly, exerts a strongly corrosive action on the sand of the acid Siemens hearth, but this is no less the case with oxide of iron. When a piece of iron or steel scrap is allowed to melt on the banks of an acid furnace the oxide of iron produced during the melting instantly attacks the silica of the hearth, forming a fusible ferrous silicate, the banks being cut in such places as the drops of melting steel trickle upon. Notwithstanding this action, it would at the present day be seriously argued that it was dangerous to melt steel in contact with the bottom; in fact, the amount daily charged on the furnace bottom in America, even in acid practice, is so great as to entirely discount any fear which many of the old school of melters still retain.

It is evident that the extent to which a furnace is cut is directly proportionate to (among other things) the richness of the slag—the slag or cinder rich in ferrous oxide which trickles from melting scrap, and the slag from melting ferromanganese or manganiferous pig iron, are equally hurtful; it is, therefore, pertinent to inquire what constitutes an inert slag and what proportion of ferrous oxide or manganese oxide (or both) can be considered allowable. Probably no slag can properly be described as inert, as even if so constituted as not to attack the hearth by chemical action there will inevitably be a certain amount of scorification arising from the mechanical agitation following each addition of ore; but as some slags are undoubtedly more corrosive than others it will be advisable to revert once again to a consideration of the compo-

sition of melting furnace slags. H. H. Campbell says: "There is a force at work in an acid furnace constantly creating a slag with 50 per cent. silica and 45 per cent. of ferrous oxide plus manganous oxide." If this be conceded the natural inference is that such a slag is as nearly inert as need be, and the slag resulting in our practice containing 10 per cent. more silica (the fluxing constituents being reduced by the same figure) is even less harmful.

Even when the manganese in the pig iron reaches 2 per cent. and the silicon and sand are reduced to 1½ and 1 per cent. respectively, the slag produced need be no richer than the typical slag given by Campbell. Calculation in the same manner (assuming the wear of the hearth to be the same, and again taking the amount of ferrous oxide as 25 per cent.) yields a slag of the following percentage composition:

Silica	51
Lime	7
Manganiferous oxide	17
Ferrous oxide	25

Slags of similar composition to the foregoing are frequently quoted in Mr. Campbell's book, which gives the average manganous oxide in slag from several charges as 15 per cent., while in no place does the author speak of such slags having any harmful effect on the hearth of the furnace.

Open hearth practice in the States, however, differs considerably from the practice in this country; for whereas in this district the charge is principally composed of pig iron, the general practice in America has been to use 75 per cent. of scrap, thus decreasing the quantity of carbon and silicon in the charge, and thereby diminishing the time the slag is in contact with the hearth of the furnace. The relatively small quantity of ore required in American practice permits of the automatic regulation of the composition of the slag suggested by Campbell; in this country, on the otner hand, the method of charging the scrap on the top of the pig iron, exposing it to the full oxidizing influence of the flame, tends to the formation, during the melting period, of a slag rich in ferrous oxide; and as the melter during the succeeding operations makes additions of ore when he "thinks advisable, rather than when it is absolutely necessary," the slag is not given the opportunity to adjust its composition, but is usually kept so rich in oxide of iron that the banks of the furnace are severely attacked during the working of every charge, whether the slag is rich in manganous oxide or not.

In the author's opinion the practice of allowing this automatic adjustment of the composition of the slag—or, in other words, permitting the carbon of the bath to reduce the excess of oxide of iron from the slag—is attended with considerably less corrosion of the hearth. The stoppage of feeding tends neither to diminution in production (loss of time in working) nor to a lessened yield. The practice of driving with ore to the last moment, on the other hand, causes considerable loss, by reason of the excessive quantity of oxide of iron which is wasted in the slag. Thus, whereas the amount of oxide of iron in an average sample of 50 slags was only 19 per cent., a selected sample of variant practice illustrating the effect of driving (the same quality of pig and ore being employed) showed 28 per cent. of ferrous oxide with 10 per cent. of oxide of manganese.

Notwithstanding all the arguments contained within the foregoing lines, it will still be maintained that such theoretical reasoning is totally insufficient to combat the undoubted fact that not only manganiferous pig iron, but even "black" ore, has caused considerable and serious difficulty in practice, the bottom of the furnace being completely destroyed, often coming up in lumps among the charge, and necessitating extensive repairs before the furnace was again ready for use. It is very improbable that the extra 2 or 3 per cent. of manganese contained in the "black" ores is responsible for so serious an action as this. The slag in American practice often contains as much as 20 per cent. of oxide of manganese. It would be expected that, if this element was in itself responsible for the trouble, the bottoms of the American furnaces would be constantly going wrong, as the writer has never obtained a slag containing more than 19½ per cent. of manganous oxide even when using highly manganiferous pig iron. The cause of the trouble must, therefore, be looked for in some other direction, and the most obvious explanation appears to be as follows: The sand bottom formed when commencing to work a new furnace is always more or less porous, and however carefully the operation of bottoming is performed it not only absorbs a large quantity of the slag charge used for washing, but it also appropriates a considerable percentage of the first charge or two melted thereon. Further, no matter what care and attention is bestowed upon the "fettling" after each charge, pieces of the bottom will occasionally give way and be found bad when the furnace is tapped, and whether splashed, washed or dried out, a greater or less quantity of metal will remain in the bottom, which in course of time becomes so impregnated with metal as to need flowing and remaking. Under these conditions it is evident that no furnace bottom is so hard and free from metal as might be wished, and if from any cause the heat of the metal of the charge is higher than usual, it will at once attack the weak spots and cause the bottom to come up, partially or wholly, according to the quantity of metal which the sand retained; and as the heat produced by the combustion of the carbon in the bath is better retained by a thick slag than one which is rendered fluid by the presence of an excess of ferrous oxide, it follows, as a natural sequence, that if the automatic adjustment suggested by Campbell takes place in a furnace, the man in charge of which is accustomed to work with fluid slags, the extra viscosity produced by the lessened amount of ferrous oxide causes the bath of metal to be hotter, and thus to find the weak places, if any, in the bottom.

The remedy for such trouble evidently is to permit this automatic adjustment to take place and to regularly work with more viscous slags than is generally done. The necessary heat for tapping would then be more easily obtained the brick work of the furnace would last longer, the corrosion of the slag line would be lessened, and when the furnaceman was thus trained to judge the heat of the metal itself rather than that of the furnace, the use of manganiferous ore and, if needful, more highly manganiferous pig iron, would not be attended with such serious consequences as it appears to have been in the past.

In conclusion the author desires to state that this paper has not been written with a view to encourage the manufacturers to increase the percentage of manganese in the pig iron they produce, but is a hastily written attempt to present the opinions deduced from a series of observations undertaken with the view of gaining experience which would prove of service in the event of the failure of the supply of Campanil ore which has been so long threatened.

Pacific Coast News.

SAN FRANCISCO, March 20.—Up to the night of March 14 the outlook for the crops of the State for the present year was very blue indeed. A condition of settled dry weather seemed to have set in and the almost universal impression was that we were in for another dry year. Anticipations in trade circles were as a rule of the gloomiest character. In places in the San Joaquin Valley it was said the grain was rotting in the ground. The weather was clear and cold, with never a sign of rain. But all of a sudden there was a change. On the date just noted a storm came suddenly out of the West unheralded by the Weather Bureau or any other authority on such matters, and gave a thorough drenching to all the northern portion of the State. On the next day it had reached every part of it north of Tehachapi and Monterey Bay. The next day Southern California heard the glad tidings, and, taken all in all, the State has received a thorough drenching. The fall varied from 1 to 4 inches with an average of about 1½ and plenty of snow in the mountains. This secures crops, pasturage and mines and with light rains from now on the crops are secure for the year. In some sections, such as in the neighborhood of Stockton and in Stanislaus County, there will be better and larger grain crops than ever in the previous history of these sections, so that unless the cold dry weather should return —and of that there is now no sign—the business prospects are the best in a decade; nay, than for a much longer period. Grain, fruit, citrus and deciduous, beet sugar and the precious metals will bring to this State an income such as she has been long a stranger to.

The heavy expenditures of the Government have proved a godsend to city merchants and manufacturers Without it they would have felt the pinch severely. As it was most of them have been doing a good business for quite a while. Every week now a transport goes out to Manila, taking a full load of supplies for the troops, the men of war and other departments of the Government's service.

As one result of the rain I look for a big demand for agricultural implements. This business had but a poor outlook, as 1898 was a bad year for it, and 1899, as far as any one could see, promised to be a great deal worse. The result was that country dealers were holding back their orders on all hands, especially in the southern half of the State, and the manufacturers throughout the country were bracing themselves up to hold out for better times. For we in California have mainly our own State to look to. There is some export demand and occasionally there have been large orders received from Mexico, but this is a rarity and the grain crops of the State are the only standby. In the East it is different, as a whole or partial failure in one section is made up in another. The undesirable condition of things would have struck Stockton with particular force, for here the most flourishing industry of the kind in the State has its seat and center, and here also several important inventions and improvements in this line have had their origin. The city in question is the business center of the most extensive agricultural sections of the State.

In my last communication I unwittingly fell into an error. J. D. Spreckels & Bros., the most extensive shipping firm of the city and the owners of the vessels composing the Oceanic Steamship Company, had decided to have three vessels of large tonnage built, and it was given out that they were to be built at Cramps' ship yard because the Union Iron Works of this city had too much work of the kind on hand to complete these vessels within a reasonable time. This last statement, however, proves to be erroneous, and there has been much unfavorable comment made on the action of the firm. Of course, as long as they are built in the United States it is all the same to *The Iron Age*. It was anticipated by the public generally that this act of the firm in question would result in the enforced idleness of a large number of workmen, but this proves not to be the case, as a large Eastern firm have given orders for the construction of two large ocean steamers, which will be employed in the Hawaiian trade. This will give full employment to the whole force of workmen for quite a long time to come. The Hawaiian trade is the most important general merchandise trade that this city enjoys outside of what was formerly United States territory, and it has of late been growing at a great rate. It is a particularly good market for machinery, pumping engines, iron pipe, hardware and iron and steel generally. The value of that trade this year will not fall short of $1 500,000 and may reach $2,000,000. Of course machinery is the great standby of the iron and metal trade with the islands, but other articles are assuming a good deal of importance. This trade is now carried on by means of sailing vessels, of which there are more than a score in the service. There is one steamer, the "Australia," which makes monthly trips, while the Australian steamer also helps out in the business. But there is ample room for the two new steamers, which will help to develop the trade on account of their swift passages and generally better service. There is also some talk of a couple of new steamers for the coast trade, which will doubtless be built here too. There are several of our iron works that can build steamers of moderate size, but only one that can construct ocean leviathans.

The machinery business was quite good last year and during the present year it has been good so far. The vessels that were built here for the Government, for Japan and for the Klondike took a great deal of machinery in addition to the usual demand for home use in the mines, &c., and for export. I have already referred to the increase in the latter. Here a portion of the trade that should have come to Americans went to European manufacturers. During the close of the year large quantities were shipped on sailing vessels for plantations in the Hawaiian Islands. The European manufacturer saw that this was his last chance before the tariff of the Hawaiian group should have been assimilated to that of the United States, and he hurried up his business accordingly.

Since my last communication there has been a general upward tendency in prices of all articles of iron, steel, &c., but no special marked advance. An advance in prices in San Francisco is ordinarily a long one, each one waiting to see what his neighbor will do and not so infrequently catching that neighbor napping and disposing of a goodly volume of merchandise at lower figures than his fellow tradesman. But since the organization of the hardware men this spirit has given way to one more conducive to prosperity in every respect, so that an advance nowadays generally means one all along the line.

There will without much doubt be a tremendous salmon pack on the Coast this year, as a great fleet has already sailed or is preparing to sail for Alaska and the Columbia River. British Columbia and Puget Sound will do their utmost to swell the quantity. Then the timely rains have saved the fruit crop as well as the grain crops, and there will be a big pack of fruit. In fact, the latter seems to increase steadily whether the crop increases or not. There are an immense number of trees coming into bearing every year and this will be the case for the next ten years. This seems to be usually forgotten when the effect of the unfavorable weather is being discussed. The consumption of tin plate should, under normal circumstances, be larger each succeeding year, and I expect that during the present year it will be from 350,000 to 400,000 cases. This of course assumes that the salmon pack will equal some very sanguine estimates that have been made. As a rule these are more reliable than the pessimistic ones, for the latter are given out year after year with a sort of fatuous regularity only to be belied later on when the returns come in. It is hoped by consumers at this end that there will be no further advance in prices, as neither salmon nor fruit can stand much of an advance at present, and as competition in both lines despite new combinations is constantly becoming keener there is no particular hope of higher prices in the future. Tin plate is the principal article in the market now. As to the rest, pig iron, nails, wire, pipe, &c., they are very firm, while trade in them is looking up. J. O. L.

A plant for the manufacture of horseshoes is projected at Maysville, Ky., by B. J. Malone.

The Pratt & Whitney Company.

At a meeting of the Board of Directors of the Pratt & Whitney Company held at Hartford, Conn., March 24, the following officers were elected: Amos Whitney, president; Rowland Swift, vice-president; Roswell F. Blodgett, secretary, and J. C. Stirling, treasurer. The office of the second vice-president, lately held by George W. M. Reed, was not filled. The same men who constituted the Executive Board last year were re-elected. Previous to the directors' meeting, a meeting of the stockholders took place, which was largely attended, 15,000 shares of capital stock being represented. The treasurer's report showed that the sales for the past year amounted to $1,315,603.10, a net profit for the year of $882,940.71. The following are the directors for the coming year: Francis A. Pratt, Amos Whitney, Roswell F. Blodgett, Rowland Swift, William Waldo Hyde, J. R. Refield, George W. M. Reed, Frank C. Sumner, Daniel R. Howe of Hartford; C. C. Cuyler, A. C. Vaughn and Robert S. Walker of New York, and T. J. Nicholl of Rochester. Mr. Nicholl, who is the new managing director, takes the place of Gen. H. J. Morse of New York on the board.

Duquesne Record Breaking.—The Duquesne Steel Works plant of the Carnegie Steel Company, Limited, broke all previous records for ingots and finished material on Monday last, March 20. The converting mill produced:

	Heats.	Tons of ingots.
No. 1 turn	105	1,013
No. 2 turn	116	1,126
Totals	221	2,139

The rolling mill produced:

	Heats.	Tons.
No. 1 turn	114	955
No. 2 turn	118¾	1,032
Totals	232¾	1,987

consisting of 4 x 4, 1⅝ x 1⅝, and 2 x 2 inch billets and splice bars. On Tuesday, March 21, the best previous records of Monday were eclipsed in the converting mill, viz.:

	Heats.	Tons.
No. 1 turn	119	1,143
No. 2 turn	118	1,125
Totals	237	2,268

The Engineers' Society of Western Pennsylvania.—The regular monthly meeting of the Engineers' Society of Western Pennsylvania was held on Tuesday evening, March 21, at 410 Penn avenue, Pittsburgh. The following were elected to membership: James Bonar, manager for James Bonar & Co.; Joseph Fawell, chief mechanical engineer for Mackintosh, Hemphill & Co.; Michael Greenwood, agent for Laidlaw Dunn Gordon Company; Arthur Herschmann of William Sellers & Co.; Res James, superintendent of the open hearth department, Carnegie Steel Company, Limited; I. Walter Jenks, superintendent of the La Belle Steel Works; John W. Parker, chief inspector of the Carnegie Steel Company, Limited; Henry B. Prather mechanical engineer and local manager of the Buffalo Forge Company; J. H. Schlieper, mechanical engineer and manager of the Pittsburgh Feed Water Heater Company; J. E. Schwab, general superintendent of the Duquesne Steel Works, and Loren H. Turner, superintendent of motive power for the Pittsburgh & Lake Erie Railroad. Chester B. Albree read a paper on "The Use, Design and Manufacture of Iron in Ornaments."

Information Wanted.—Who produces papier maché or makes machinery for its manufacture?

An amicable adjustment of the dispute between the iron molders and founders of the Cincinnati, Ohio, district was come to last week, resulting in a 10 per cent. increase in wages, to go into effect on May 1. The agreement binds both parties until March 31, 1900, and prescribes that a notice of 30 days must be given of any intention to change. Several thousand men are affected by the change.

A syndicate composed of Eastern and Canadian capitalists have just purchased a large body of coal, iron and timber land in Eastern Kentucky, running through three counties and aggregating 340,000 acres. The coal veins are stated to run from 6 to 13 feet, and the coal makes a very high grade coke. The land represents the holdings of a number of separate interests.

The International Cement Company have been formed with a capital of $25,000,000 of 7 per cent. preferred stock, and a like amount of common stock. All the manufacturers of Portland cement, with the possible exception of one leading company in the Lehigh Valley, have entered this consolidation.

The Iron Age.

New York, Thursday, March 30, 1899.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

Inflation and Contraction.

Some kind of a regulator seems to be imperatively needed by the business interests of this country. Taking their individual predilections, it will be conceded that the manufacturers, merchants and bankers are conservative. The great majority are undoubtedly in favor of a steady volume of business with moderate profits. They decry booms and wild speculation. They preach moderation, and some of them have undoubtedly made sacrifices in endeavoring to check the current of business when they thought it was becoming too rapid. Marked instances of this character were observed last year. Yet, notwithstanding such efforts, we are now in the midst of a movement which bids fair to equal if not surpass all previous periods of inflation that have swept over the United States. It would seem as if the conservatism of our foremost business men should have been sufficiently powerful to regulate commercial currents. Why have they not been able to do this?

The answer is probably found in the fact that each period of reviving prosperity after a depression develops a fresh brand of inflation or speculation against which previous experience provides no safeguard. Thus at one time we find a craze for the establishment of banks to issue currency in the backwoods, at another time a fever for buying up farm lands, again a great boom in city real estate and town lots, then a rampant desire to consolidate railroad systems, next a wild race to build new railroads, then a rage for mining investments, again a passion to build great cities in a wilderness, then an industrial boom in building manufacturing establishments by local bonuses. All these developments of the speculative instinct in the masses were followed in due time by commercial depressions, some of them leading to serious financial disturbances, taking several years of pinching economy for the nation's recovery. Valuable lessons were supposed to have been learned on every such occasion which would be of service to future generations of business men to the end of time. But the genius of speculation does not assume the same shape twice, and weak human nature succumbs whenever confronted with a new appearance in seductive guise.

Prudent people are now thinking that they recognize in the continued formation of great consolidations our old evil genius, whose insidious work will result some fine day in a great crash, leaving the usual financial wrecks and taking another wearisome period for recovery. Some excellent projects of this character have been and are being formed which will be able to earn good dividends for their stockholders in depressed as well as in active times. But many others have been organized more for the sale of securities than to conduct a legitimate business, and it is difficult for the public to discriminate. They are being loaded with securities of this kind, and much capital is thus being withdrawn from perhaps more natural uses to sustain a condition which, to draw it mildly may be described as somewhat artificial. If the mania for consolidations could now be checked by the refusal of the people to support new schemes by buying their securities the danger of a crash would be averted. Those securities which have been issued would not in themselves cause serious financial disturbance, and in time their values would find their proper level according to the earning capacity of the properties represented. But the movement goes on. The manufacturing of industrial consolidations seems as active as ever. A bewildering variety of new projects comes out almost daily. The end will probably be found in the failure of some important financial institution which has underwritten a greater load of such securities than it can carry. Or it may be precipitated by some astute prosecuting attorney or attorney-general who finds a vulnerable point of attack which may excite apprehension among the holders of consolidation securities and cause them to unload in a panic of fear. The possibility of such a catastrophe is already causing shrewd business men to fortify themselves as much as they can by reducing their obligations. Should such caution become general the apprehended crisis will not take place. The fever of speculation will subside without a crash, and our prosperity will not be painfully interrupted.

Our Open Hearth Steel Industry.

Although a liberal increase in the production of open hearth steel during 1898 was expected by the steel trade, we doubt whether many were prepared for the great jump in the output which has been shown to have taken place by the official statistics which we print elsewhere. An increase of 611,821 gross tons in one year, making the total for 1898 2,220,492 tons, or close to one-third that of the make of Bessemer steel, is certainly an astonishing record. The greater part of the increase is due to the growth in the manufacture of basic open hearth steel. This was 503,369 tons out of 611,821 tons, carrying up the total of basic open hearth steel to 1,559,412 tons for 1898.

There are several causes which may be pointed to as contributing to the development of the basic open hearth steel process in this country, causes whose potent influence is expected to give a further growth, even at the expense of the manufacturer of Bessemer steel. Foremost among them is the fact that the off-Bessemer ores of the Lake Superior iron ranges have been produced in such growing quantities that the price has been very low, making it possible to produce the pig iron very cheaply. The capacity to handle a very much larger range of quality of scrap has aided in the same direction. Then, generally speaking, open hearth steel practice, neglected until recent years so far as handling materials is concerned, has been rapidly improved. The statement has been repeatedly made—and the action of some large concerns in increasing open hearth plant seems to confirm the statement—that basic open hearth ingots are being made quite as cheaply as Bessemer ingots. What influence in this direction will be exerted if the experiments in the direction of the continuous process turn out successfully remains to be seen. There are many who believe that this improvement will be epoch making.

There is another advantage which the basic open hearth process possesses which is likely to stimulate the production of steel in this manner. The unit of plant is a small one. While no one would think to-

day of building a Bessemer plant of a capacity less than 1000 tons per day, open hearth steel can be made quite cheaply in a small plant of four furnaces capable of producing 2500 to 3000 tons per week. With large consolidations in control of Bessemer plants smaller rivals of them could make themselves independent for their steel supply. Besides, in certain parts of the country with a large scrap market to draw upon they could probably get their chief raw material very cheaply. Some isolated plants of this character have proved very successful in recent years.

Then, of course, the current year is to witness the start on a large scale of basic open hearth steel manufacture in the South. This, with the new plants and extensions in other parts of the country, will considerably increase the product, and we hope soon to catch up with the British steel makers.

It may be of interest in this connection, now that we have the statistics, to compare our steel product with that of Great Britain in 1898. The figures are:

Steel Production in 1898.

	United States. Tons.	Great Britain. Tons.
Bessemer steel ingots	6,609,017	1,759,386
Open hearth ingots	2,220,492	2,806,600
Total	8,829,509	4,565,986

In conclusion one interesting fact may be referred to, and that is while in 1897 the production of basic pig in this country, 556,391 tons, represented 52.7 per cent. of the product of ingots in 1898, the product of pig, 785,444 tons, represented only 50.4 per cent. Since presumably a larger amount of basic pig was exported in 1898 than in 1897, do these figures indicate that the proportion of scrap carried in our open hearth furnaces is growing?

Apprehensions Regarding Banking Reform.

The members of the majority party in the last House of Representatives created a committee, consisting of gentlemen who were members of the House then in existence and would be members of the next Congress, to see what could be done in regard to currency legislation at the next session of Congress. One of the members has been canvassing the bankers of his State, a Western State with a large sound money sentiment, to ascertain their opinions and wishes. The two important facts he secured were that there exists, first, a very general conviction that the Government must maintain all of its monetary issues at par in gold—that is, it must permit no change in the unit of value, and not even the fear of any change—and that there is, secondly, a good deal of opposition to the proposal to base bank currency upon the general assets of the bank instead of on a deposit of bonds.

There is a close connection between any substantial reform of the national currency and this proposed change of the security of bank currency, which excites opposition mainly because it is a departure from a system we are familiar with. The most important reform to be effected in national currency is the withdrawal—very gradually, probably, but the withdrawal in the next few years—of the legal tender notes, and if these notes be withdrawn there must be an issue of bank notes to take their place. Since the volume of the national debt is destined to diminish, and since the net return on an investment in Government bonds is declining, the circulation of the national banks is tending downward. It is true that it moves occasionally in an upward direction under the influence of forces that cannot act very long or very far. The permanent forces affecting the currency tend to reduce the amount of circulation based upon bonds in spite of increasing population and increasing business.

The objections to the substitution of general assets for bonds as note security are in the main two—one is that such a security will not secure and the other is that the note holders should have no preference over depositors as creditors of banks. It is generally, but not always, assumed as a part of the general assets proposition that the notes should be a first lien upon all the assets of a bank.

As to the first objection, comparisons which have been made with great care between the assets and the circulation of failed national banks leave no doubt that a very small safety fund, or similar device, would make all the notes absolutely secure, and the cost of what might be called the co operative insurance between the banks would be so very small that it would offer no obstacle whatever to the plan. Were each bank responsible for its own circulation there might occasionally be some danger, but with the guarantee of Governmental inspection and control against over-issues of notes the associated banks of issue could very well afford to guarantee the public against loss on circulation by the failure of any individual bank. The public needs to be reminded many times that in this and many other States there was a considerable period of sound banking under State laws after the "wildcat and red dog" era, and before the national bank era. The problem of a safe bank currency was not solved by the Federal Government, but by State governments, and was solved many years before the national bank law. The requirement that bonds should be deposited was not designed to protect the public against bad money, but to compel the banks to lend their capital to the nation when it was greatly needed. The prohibition against State bank circulation was not at first proposed. The State bank circulations were afterward taxed out of existence because they were so good that they prevented the circulation of national bank notes, and in order to force a market for its bonds the Government determined that notes secured by national bonds should have a monopoly. The aversion now encountered to a bank currency secured by general assets is due to the entirely erroneous impression that the "wildcat" banking era did not end till the Civil War, and was only terminated by the introduction of notes secured by a deposit of national bonds.

As to the other objection, there are reasons of more or less validity why the note holder should be preferred to the depositor; the latter has some and the former has no means of knowing anything of the bank he is asked to trust. But whether this reason be sufficient or not, the conspicuous fact is that under the national bank system the note holder is preferred to the depositor. Before a bank can issue any notes the Government takes a portion of its assets greater than the notes to be issued and holds those assets for the exclusive protection of the note holders.

Neither of the propositions to which objection is oftenest made is new or untried or has been discredited by experience. Here and elsewhere the general assets have been found an ample security for the note holders, while making the note holders preferred creditors is not even going back to the practice of 40 years ago; it is but continuing what has always been the practice under the national bank law.

The agitation for better country roads in Indiana and Illinois is bearing good fruit. A single township in Indiana recently voted to expend $43,000 in building

36 miles of macadam roads, and others have decided to expend considerable amounts for the same purpose. The Illinois Legislature is about to enact a law which is also expected to greatly stimulate the improvement of country roads in that State. The railroad companies are in strong sympathy with the movement, as their traffic is frequently reduced considerably when country roads are in bad condition for hauling.

The Growing Interest in Iron Ore Property.

Circumstances of the late months have put a stop to the cry of a few years ago that there was so much iron ore in sight since the discovery of the Mesaba range that it would never be worth anything again. Concerns interested in mining and shipping, more especially those who had heretofore been lukewarm in their interest in ore supplies, have been in the field for ore of late, and there has been quite a little boom in sales of lands on which ore has been proven. As a general thing values are held at pretty reasonable figures, and any tendency toward a cessation of the extraordinary demand for steel or indicating any difficulties in the way, either as to labor or anything else, would depress them, perhaps; but it looks as if there was to be for a long time, probably till the available ore lands are picked up and put out of the way, a market for anything in the lake country that shows indications of becoming a mine, if prices are reasonable.

As the natural result of all this there is a sudden impetus to explorations, and the option broker is abroad in the land. This interest in exploiting new lands is confined not to any one range, or even to the newer ones, but is general to all, and the Menominee and Gogebic are well up to the front.

Another interesting tendency of the day is the evident desire of those ore consumers who have heretofore thought little of their ore supplies and cared less to secure property while there is yet time. Some of these people have made purchases that indicate no very thorough knowledge of the situation nor of what they were buying. Still another tendency is that of collecting under single managements several of the smaller properties that can be worked economically together. This has been done in several instances and is still going on all over the mining regions.

In anticipation of a boom that may never come many are securing options on mining lands, or acreage located on the ranges, and are holding for advances. If anything can kill the movement in iron ore land quicker than another it is this very tendency. Some of the leading concerns in the market for properties are refusing to deal with any but holders of fees direct.

Very large sums of money have been disbursed along the mineral ranges the past few months for properties, for exploratory work, for the cleaning up of old and imperfect titles, for the reduction and arrangement of royalties, and for the collection of groups of properties, and a most healthful condition prevails.

The Pioneer Furnaces.—A report has been given currency that the furnaces and extensive mineral property of the Pioneer Mining & Mfg. Company of Birmingham, Ala., had been acquired by the Federal Steel Company. The report is untrue. The Pioneer property is under option to a consolidation of rolling mill interests now approaching completion.

A movement is on foot to consolidate the blast furnace plants and mineral properties of the Sheffield district in Alabama.

CORRESPONDENCE.

The Loss of Silicon in Annealing Malleable Iron.

To the Editor: I am much interested in the correspondence which has appeared in *The Iron Age* relative to the loss of silicon in annealing malleable iron. Is it not possible that both Mr. Davis and Mr. Wheeler are right, and that the difference which they find is due to the different method which has been employed?

I suggest this, as some years ago, while manager of the Cameron Furnace, I had occasion to make a series of silicon determinations in pig iron, which was remelted a number of times. Unfortunately, the note book in which these results were kept has disappeared, but I remember clearly that, using Drown's method, we found that with each remelt the silicon decreased slightly. These results were afterward checked by determining the silicon in the same samples, by means of chlorine, passing through a combustion tube. The results in this case showed a very material decrease in silicon, and subtracting the figures thus obtained from the silicon, as determined by Drown's method, gave a steadily increasing difference, which I assumed, but could not have an opportunity of proving, was through either the oxidation of the silicon to silica or through the formation of a silicon compound, which was not acted upon by chlorine, and which increased in quantity each time the iron was remelted.

This matter was taken up at the time with R. A. Hadfield, but has never been, to my knowledge, thoroughly investigated. It would seem to me that the matter is of enough consequence to be worthy of a series of careful determinations, as some light may be thrown upon the action of silicon in such instances as your correspondents have cited. HENRY S. FLEMING.

NEW YORK, March 27, 1899.

OBITUARY.

WILLIAM C. COLBURN.

William C. Colburn, president of the Detroit Bridge Works, died in Detroit, Mich., on March 12, aged 65 years.

WILLIAM A. SMITH.

William Allen Smith, well known in the iron and steel trade of New York City, died suddenly on March 24 from an affection of the heart, at his home in New York, at the age of 51 years. He was born at Amherst, Mass., and was the son of the Rev. Dr. Henry B. Smith, the theologian. In 1850 the family moved to New York, and the son spent his boyhood here. In 1868 he was graduated from the Columbia School of Mines. For several years after graduation he lived in Berlin, and acted there as the private secretary to George Bancroft, the United States Minister. After his return to this country he was employed by Cooper, Hewitt & Co. and Phelps, Dodge & Co., in New York. For the last few years he had been with the Harvey Steel Company.

JOSEPH H. JACKSON.

Joseph H. Jackson, who was engaged in the iron business at 208 Franklin street, New York, died from pneumonia on March 23, at his home, in Morristown, N. J., aged 80 years. He was born at Rockaway, N. J., and for a number of years was engaged with his uncle, Colonel Joseph Jackson, in the iron manufacturing business there. In 1848 he went to Maryland and was interested in the Mount Savage Iron Company for ten years.

FRANK CARTER.

Frank Carter, one of the best known mining engineers of Eastern Pennsylvania, died at Pottsville, Pa., March 22, at the age of 65 years. He for many years had charge of the coal lands controlled by the Philadelphia & Mahanoy Coal Company. In 1859 he laid out the town of Mahanoy City. When the Philadelphia & Mahanoy Coal Company sold out to the Reading Coal Company, about 1871, Mr. Carter was appointed land agent for the new company and placed in charge of all their vast estates, which position he held until his death.

RICHARD A. TILGHMAN.

Richard A. Tilghman, inventor of the sand blast and a member of the firm of B. C. & R. A. Tilghman of Philadelphia, died of Bright's disease on March 24, after a prolonged illness. He was born in Philadelphia in 1824 and studied chemistry after graduating from the University of Pennsylvania, which he made his profession. Some years ago he invented the sand blast, and with his brother, Benjamin C. Tilghman, established a large plant in Philadelphia for the manufacture of these machines. Mr. Tilghman was well known as an experimental chemist, and many inventions are credited to him.

JEREMIAH HEAD.

In the death of Jeremiah Head, which occurred at Hastings, England, on March 10, the British iron and steel industry loses one of its foremost representatives. He was born in 1835 at Ipswich, England, and after leaving school was articled to Robert Stephenson, M.P., the celebrated engineer. He served his time at the well-known locomotive and marine engine works at Newcastle-on-Tyne carried on by Stephenson and others, and was afterward promoted to a position on the civil engineering staff, in which he was intrusted with much important work. In 1863, in conjunction with Theodore Fox, Mr. Head built large iron works at Middlesbrough, and carried them on until 1875, soon after which year they sold them and dissolved partnership. Since then Mr. Head, although still deeply interested in the Cleveland iron and steel industries, devoted his time and personal energies almost exclusively to professional engineering. He visited most European countries, more particularly Spain, Norway and Sweden, as well as the United States, and made exhaustive reports on various properties, more especially iron, coal and manganese mines and iron and steel works, for English and foreign clients. He was managing director of the Otis Steel Company of Cleveland, Ohio. As a valuer of technical and other properties Mr. Head had large experience the aggregate amount of what had passed through his hands in this way during the last few years reaching many millions of dollars. As an author of scientific papers Mr. Head was well known. He contributed valuable memoirs and addresses to the British Association, the Institution of Mechanical Engineers, the Iron and Steel Institute, the Cleveland Institute of Engineers, the Sheffield Technical School, and various other societies, as well as numerous articles to current technical literature. He was buried at Highgate Cemetery on March 14.

PARKER P. HOGUE.

Parker P. Hogue, the inventor of the Hogue injector, used on all kinds of boilers, died March 21, at Sandy Lake, Mercer County, Pa. He was for many years engaged in the manufacture of his invention in Cincinnati, Ohio.

HENRY BOLLINCKX.

Henry Bollinckx, the founder and proprietor of the large power transmission machinery works of Brussels, Belgium, died at his home in Cureghem, Belgium, on March 7. He was born in Brussels March 29, 1826. The plant in Brussels is one of the finest of the type in Europe.

Sheet Steel vs. Brass.

Quietly and steadily developments of an interesting character have been taking place in the sheet metal industry. Their effect has been to raise the position of sheet steel as raw material for the stamping industry and make it a growing competitor of sheet brass for all sorts of intricate work for fancy articles. Cold rolled stamping steel is being supplied in rapidly growing quantities for the manufacture of articles of intricate design which had previously been manufactured almost exclusively from brass. Our attention has been called to some specimens of work of this character produced from Swedish cold rolled stamping steel, furnished by the Wilmot & Hobbs Mfg. Company of Bridgeport, Conn. They show filigree work as fine and as elaborate as on many of high grade solid silver spoons and forks. One would scarcely believe that it were possible to work steel in this manner. We understand that the Swedish steel permits punching and stamping work of this character to be done without any extraordinary wear and tear of delicate dies.

An advantage of steel is that the articles produced are considerably stiffer than if made of sheet brass of the same thickness, thus enabling the producer to manufacture his article from steel several gauges lighter than brass and yet have the steel article of the same strength as the heavier brass blanks. We have inspected also samples of copper plated articles made from Swedish steel, which are admirable in color, smoothness and finish.

The Casting Machine at Cambria. — About two months ago Heyl & Patterson, engineers and contractors, Pittsburgh, Pa., installed at the blast furnaces of the Cambria Steel Company, Johnstown, Pa., one of their patented pig iron casting machines manufactured by them. The machine has been in operation for eight or nine weeks and in that time has worked very successfully, the results obtained being entirely satisfactory.

W. K. Bixby, president of the American Car & Foundry Company, is reported as stating that the company have orders in their books aggregating more than $5,000,000. This includes 35,000 cars and 355,000 wheels.

PERSONAL.

Edward M. Allen, formerly engineer in the mechanical department of the Cambria Steel Company, Johnstown, Pa., has resigned to take charge of the engineering department of the Frank-Kneeland Machine Company of Pittsburgh, Pa.

Frank H. Buhl of Sharon, Pa., has returned from a trip to Europe.

The Board of Directors of the Philadelphia Exposition Association have selected John Birkinbine, president of the Franklin Institute, as engineer-in-chief of the mechanical and electrical construction and sanitary engineering of the Exposition of Manufactured Goods to be held in Philadelphia next fall. Edmund A. Felder was appointed as assistant director-general and Benjamin W. Hanna as secretary of the Exposition Association.

Frank T. Bentley, general freight agent of the American Steel & Wire Company, Chicago, has been appointed traffic manager of the Illinois Steel Company, assuming the duties of his new position on the 23d inst.

Stillman W. Wheelock has been appointed manager of the Denver office of the Illinois Steel Company.

George J. Humbert, late president of the Humbert Tin Company of South Connellsville, Pa., whose plant was absorbed by the American Tin Plate Company, has been appointed district manager of the Eastern group of mills owned by the company, including the plants at Connellsville, Demmler, Blairsville, West Newton and Philadelphia, Pa., and that at Cumberland, Md.

W. S. Accles, manager of the foreign branch of the Niles Tool Works Company, with headquarters in London, has returned to his post after a brief business visit.

H. F. Martin, assistant to the president of the Pennsylvania Steel Company, has been appointed general sales agent of the Pennsylvania Steel Company and the Maryland Steel Company, with headquarters at Steelton, Pa.

Willard S. Mattox, the European representative of Rogers, Brown & Co., has returned to his post. He will make his headquarters at London.

Henry Gardner of Merton & Co., the London metal merchants, has returned home after spending six weeks in this country.

John Platt of Thorpe, Platt & Co., the American representatives of John I. Thornycroft & Co., the well known English torpedo boat builders, sails for England on April 1 on the "Umbria," to be there some two months or more. Mr. Platt will investigate the water tube question as far as it relates to big ships.

John Reis, formerly manager of Edith and Rosena furnaces of the Oliver & Snyder Steel Company, but which were purchased by the American Steel & Wire Company, has been made general furnace manager of the National Steel Company.

James O. Nesbitt, master mechanic of the Edgar Thomson Steel Works at Bessemer, Pa., has resigned his position to accept one at Birmingham, Ala.

Geo. J. Humbert, formerly president of the Humbert Tin Plate Company, Connellsville, Pa., before they were taken over by the American Tin Plate Company, has been made district manager of the tin plate mills in the Pittsburgh and Eastern districts. The plants included in Manager Humbert's jurisdiction are as follows: Humbert plant at Connellsville, six mills; United States plant at Demmler, 11 mills; West Newton plant, two mills; Cumberland plant, five mills; Blairsville plant, two mills; Marshall plant at Philadelphia, six mills.

Bernard Goldsmith, who was formerly district manager, has been put in charge of the plant at Elwood, Ind., containing 26 mills.

R. C. Penney has resigned as general manager of the Union Iron Works of Bangor, Maine, to take effect on April 1. Mr. Penney proposed to take a rest for a few months, and will visit the South and West.

The Federal Steel Company.—Quite extensive improvements are to be made at the plants of the Federal Steel Company. Two modern blast furnaces are to be built at South Chicago and a number of other improvements are to be made at the Chicago and Milwaukee plants. In addition to the two new steamers for the ore trade, ordered about 60 days since, the Federal Steel Company have bought two modern steamers and have just ordered two additional boats from the Chicago Ship Building Company.

Trade Publications.

Rock Drills.—A small pamphlet has been received from the Ingersoll-Sergeant Drill Company, 26 Cortlandt street, New York. The company make four types of rock drills—namely, Ingersoll Eclipse, the New Ingersoll, the Sergeant, and the Arc Valve Tappet. The New Ingersoll has been developed by recent experience, and was perfected during the latter part of the year 1897. It combines the best features of both the Ingersoll and the Sergeant. It has compound valve and the release rotation. It strikes an uncushioned blow and has a variable stroke. It is the best all around drill, being adapted for both steam and air and for hard, soft or broken rock.

Chain Saw Mortisers; Steam Engines.—Catalogues have been received from the New Britain Machine Company of New Britain, Conn., describing their chain saw mortisers, band saw guides, and the Case automatic high speed engine. In the first the mortise is formed by an endless chain, each link of which has a sharpened tooth so formed as to carry out its own chip. The chain travels approximately 1500 feet a minute, during which time 40,000 teeth are presented to the work, and while one tooth removes but a small amount of material the aggregate cut of all the teeth exceeds that done by other mechanisms.

Planers.—A circular from the Cincinnati Planer Company of Cincinnati describes their new 30 and 33 inch planers, which embody all the good features suggested by the long experience of this company in the manufacture of tools of this type.

Electric Motors.—The Sprague Electric Company of 20 Broad street, New York, have issued a handsomely illustrated pamphlet dealing with the Lundell motor. The engravings show the various steps in the manufacture of the motor and its application to a wide line of machinery.

Steam Engines—The Standard slide valve engine manufactured by the George B. Sennett Company of Youngstown, Ohio, is described in a catalogue. The engine is completely self contained, has a solid steel center crank shaft. It is made with the most improved special machinery and a complete set of jigs and templets to insure the interchangeability of all parts. Tests of the engine at half and full work show it to be as efficient as a high grade automatic. Every engine is thoroughly tested before leaving the works and is guaranteed.

Air Compressors and Hoists.—In a recent catalogue the Curtis & Company Mfg. Company of St. Louis describe their air compressors, air hoists and air appliances. Their automatic air compressors are especially designed for machine shops, boiler shops, shipyards and other places where a steady or intermittent supply of compressed air is required. The governor is designed to automatically maintain any desired air pressure. It will instantly respond to the slightest change in pressure in the reservoir. The compressors are power and steam driven. Their air hoists are made in all sizes from 3 to 30 inches in diameter and all lengths. Cylinders up to and including 4 inches are made of seamless drawn brass tube, while the larger sizes are made of special steel tube accurately bored and polished. These hoists are intended for attachment to hand cranes and for special purposes.

Steam Pumps, Governors and Valves.—The Gardner Governor Company of Quincy, Ill., describe their various products in a catalogue. Among those mentioned are duplex steam pumps, boiler feeders, fire pumps, compound pumps, and so on. Their pump governor or pressure regulator can be set at any desired pressure, which it will maintain with but very slight variation, thereby preventing the danger from bursting pipes and holes arising from violent shocks or jars due to excessive pressures. It is used largely on fire, water works, and elevator pumps, and in many other places where uniform pressures are desirable and where excessive pressures might prove injurious. Besides saving unnecessary wear and tear of costly machinery, it is economical in reducing the fuel consumption.

Bolt and Nut and Forging Machines.—A very complete catalogue has been issued by the Acme Machinery Company of Cleveland, Ohio, describing their bolt cutters, nut tappers, bolt heading and forging machines. Their bolt cutters have four dies to each set, made of market size tool steel, carefully ground to standard gauges, and made to fit the hardened tool steel bushings in the die head. Being plain in shape, they can be made in any machine shop by an ordinary mechanic at trifling cost. Their die head consists of three principal parts—namely, a barrel, a die ring and a clutch ring. The barrel is made of cast iron, turned, milled and bored perfectly true. To the front end is fastened a face plate which serves to hold the dies and die bushings in place. In the outer surface of the barrel are four longitudinal grooves milled to within a short distance of the flange, and in these are fitted two tool strips hardened and ground to resist the wear of the sliding die ring. These strips are fastened to the barrel with screws, so that even after years of service all wear between the die ring and barrel can be taken up. The die ring is also of cast iron, the inner surface having tooled steel strips, hardened and ground to correspond with those of the barrel. This ring controls the movement of the dies radially by means of recesses milled at an angle from its face. The bottoms of these recesses are lined with tool steel to resist the wear of the hardened steel die caps. A clutch ring made of cast iron has an annular groove to receive a phosphor bronze ring that is attached to the automatic opening and closing device. The movement of this ring is transmitted to the die ring through a rocking level and toggle. The adjusting screw is made with a fine thread, so that bolts may be cut to the exact size required, and when adjusted it is clamped firmly to place by means of a threaded bushing. All these die heads are supplied with an index, and when a record is kept of the dies the die head may be set to cut the required size without the necessity of making several trial cuts to accomplish that end.

Ball and Roller Bearings.—A very complete catalogue by the Ball Bearing Company of Watson street, Boston, has been prepared, illustrating and describing the various types of ball and roller bearings made by them. These include thrust collar bearings for drill spindles, step bearings for heavy pressures, ball and roller shaft bearings, roller bearing hangers, &c. The company carry in stock a full line of specially gauged steel balls which are warranted true to size and superior in material and finish.

Valves.—Valves of all kinds and for all purposes are fully described in a catalogue by Jenkins Brothers, 71 John street, New York. The valves manufactured by this company are of their special pattern, contain valuable improvements, and are made of the best metal for the purpose. Their iron body valves have been improved by increasing the thickness of flanges and adding more bolts, thereby making them suitable for either high or low steam pressure. The Jenkins disks have also been improved. They will stand high pressure steam and are superior in every way. Their standard packing, for its various uses, has also been improved.

The National Graphite Company.—This is the style under which papers of incorporation were filed in the State of New Jersey last week. It is stated in the trade that the purpose of the company is the extensive manufacture of artificial graphite under the process invented by E. G. Acheson, who is the president of the Carborundum Company, Niagara Falls, N. Y. It is denied that any attempt has been made to consolidate the large producers or users of graphite.

The Armor Plate Order.—WASHINGTON, D. C., March 29, 1899. (*By Telegraph.*)—Acting Secretary of the Navy Allen to-day decided to approve a circular prepared by the Bureau of Ordnance advertising for bids for 24,000 tons of armor at an average price of about $340 per ton. This price is based upon the 10,000 tons authorized for the ships provided in the naval appropriation act of 1898 at $400 per ton and the 14,000 tons for the ships provided in the recent act of 1899 at $300 per ton. The total amount of the contracts will be about $8,000,000, the deliveries ranging from one to three years. The tests prescribed are 25 per cent. higher than those heretofore provided and are intended to cover the ballistic qualities of so-called Krupp armor.

A Coke Land Purchase.—PITTSBURGH, March 29, 1899. (*By Telegraph.*)—A deed for the 1250 acres of coking coal land sold by H. C. Frick to the Continental Coke Company of Uniontown, Pa., an interest of the National Steel Company, was placed on record at Uniontown on Tuesday, March 28. The consideration was $1,250,000. The National Steel Company will erect coke ovens on this property and make coke for their own blast furnaces.

Prince Hilkoff, the Russian Minister of Railways and Telegraphs, says that when the Trans-Siberian Railway is finished it will be possible to travel around the world in 33 days, as follows: Bremen to St. Petersburg, one and one-half days; St. Petersburg to Vladivostock, traveling by rail at the rate of 32 miles an hour, ten days; Vladivostock to San Francisco by steamer, ten days; San Francisco to New York by rail, four and one-half days; New York to Bremen by steamer, seven days. It is not so long ago since Jules Verne's famous story of an 80-day tour of the globe was regarded as a stretch of the imagination. We have gone far indeed in rapid travel since those days.

MANUFACTURING.

Iron and Steel.

The 30-mill plant of the Shenango works of the American Tin Plate Company, at New Castle, Pa., is expected to commence operations on Monday, April 3. At the start only the new mills will be put in operation and the balance will be started as soon as possible. The first week or two of operation will be devoted to trying the machinery.

Jones & Laughlins, Limited, of Pittsburgh will advance wages of day laborers 10 per cent. about April 15, wages of the tonnage men employed by this concern having also been materially increased recently by reason of the heavy increase in output. Every department of the large works of this concern on the South Side, Pittsburgh, is in full operation, and the firm have orders enough to take practically their entire output for the next two or three months.

The Tyler Tube & Pipe Company of Washington, Pa., have increased wages of their employees 10 per cent., taking effect April 3.

At Lisbon, Ohio, deeds have been filed transferring the plant of the Beaver Tin Plate Company to the American Tin Plate Company, the consideration being $284,000.

The Lockhart Iron & Steel Company, at McKee's Rocks, Pa., have advanced wages of their puddlers 25 cents a ton. A further advance to other employees of this plant will be given in a short time.

Cumberland Furnace of the Buffalo Iron Company, at Cumberland Furnace P. O., Tenn., is expected to be put in blast about June 1 by Jos. Warner and J. A. Cooper. The product will be charcoal pig iron and the furnace has a capacity of about 275 tons weekly. The stack has been idle since 1893.

It is not probable that Bellefonte Furnace of the Means & Russell Iron Company of Ashland, Ky., will ever go in blast again. The furnace has been idle since 1893.

Fannie Furnace, at West Middlesex, Pa., which has been idle since 1896, is being repaired and will probably be ready for blast early in May. The stack will be operated by the Reed Furnace Company, recently organized. The stack has a daily capacity of about 150 tons.

The West Penn Sheet Steel Company, recently organized at Pittsburgh, have purchased and put in operation the West Penn Steel Works, at Leechburg, Pa., which was operated for a short time last year by Kirkpatrick & Co., Limited, of Pittsburgh, under lease. The new company will manufacture fine grades of sheet steel for galvanizing, enameling and other purposes. The officers are Jos. G. Beale, president; James B. Kifer, secretary; John R. Klingelsmith, treasurer, and Harry W. Beale, superintendent.

The P. L. Kimberly Company, Sharon, Pa., manufacturers of iron and steel, started up their 8-inch mill on Thursday, March 23, and have since started up their 9-inch mill. This plant had been idle for a long time.

J. M. Thomas, who sold the Thomas Furnace at Niles to the National Steel Company, has purchased the West Duluth Furnace, at West Duluth, Minn. He expects to blow in the furnace in about 60 days.

The Cumberland Rolling Mill, at Cumberland, Md., formerly operated by the Baltimore & Ohio Railroad in the manufacture of steel rails, has been leased to S. J. McFerran, who will manufacture bar iron, plates and re-roll old steel rails. The plant will be repaired and put in operation as soon as possible. T. S. B. Wood of Wheatland, Pa., will be manager.

Morgan Construction Company of Worcester, Mass., have recently closed a contract for the installation of a Morgan continuous rod mill of their latest type for Grand Crossing Tack Company of Chicago, Ill.

The completion of the rod mill of the Dillon-Griswold Wire Company, Sterling, Ill., has been delayed by unfavorable weather and it may not be in operation until late in April.

Among recently licensed corporations in Illinois is the United States Steel Castings Company, at Chicago: capital stock, $400,000; manufacturing; incorporators, C. F. Springer, Albert H. Putney, Percival Steele.

The Pacific Nail & Iron Company, San Francisco, Cal., have transferred their property to the Balfour-Guthrie Investment Company. The consideration named in the deed is $15,000. The works are equipped for drawing wire and rolling nail plate, and manufacturing both wire nails and cut nails.

The citizens of Peru, Ind., are greatly interested in a project to establish at that point a plant for the manufacture of steel castings.

The Burgess Steel & Iron Works, Portsmouth, Ohio, have increased their capital stock from $150,000 to $500,000.

The Illinois Steel Company's new slabbing mill at their South Chicago works has been started with much less trouble than is usually experienced in getting heavy machinery of this character in working order. The officers of the company are delighted with it. Some little time has been required to organize a working force so that hitherto the mill has been run on day turn only, but it is now to be run double turn. The output of the plate mill will be greatly increased by this auxiliary plant, but it will roll billets as well as slabs, thus furnishing open hearth stock for the company's merchant bar mills.

A new steel casting company have been organized at Pittsburgh, but a name has not yet been adopted. They may be called the Pittsburgh Steel Casting Company, Limited, but this is not certain. The company have a capitalization of $75,000. Chas. D. Marshall, secretary of the Shiffler Bridge Company, Pittsburgh, is president; Uriah Tinker of Samuel Trethewey & Co., Limited, of Pittsburgh is treasurer, and C. C. Smith, formerly of the Reliance Steel Casting Company of Pittsburgh is secretary. The superintendent will be Howard Fisher, formerly of McConway-Torley Company, also of Pittsburgh. The plant will be located at Sharpsburg, just outside of Pittsburgh, and the main building will be 125 x 240 feet. A 15-ton furnace will be erected, and the building will be equipped with a 20-ton and a 10-ton traveling crane. In fact, the entire equipment will be electric as far as possible. Work on the plant will be pushed as fast as possible, and the concern expect to be in the market as makers of steel castings about July 1 next.

Wages of laborers employed at the Pittsburgh Steel Works of Anderson, Dupuy & Co., at McKee's Rocks, Pa., have been advanced from $1.25 to $1.35 per day.

The Brown-Bonnell Iron Company, Youngstown, Ohio, have under consideration the blowing in of their Phœnix Furnace to supply them with mill iron. The stack has been idle for a long time, but can be prepared for blast very quickly. There has been a continued scarcity of forge iron in the Valleys for some time, and this concern have felt it along with other makers of iron bars in that vicinity.

Zug & Co., Limited, Pittsburgh, have given their employees, aside from the tonnage men, an advance in wages ranging from 5 to 10 per cent.

The Wheeling Steel & Iron Company of Wheeling, W. Va., have granted their employees an advance in wages ranging from 8 to 15 per cent. The advance affects day laborers and tonnage men alike.

No. 1 Furnace of the Andrews & Hitchcock Iron Company, at Youngstown, Ohio, which met with an accident some time ago, necessitating its blowing out, is being rapidly repaired and will be put in operation as soon as possible.

The Mahoning Valley Iron Company, Youngstown, Ohio, will start up their nail plate mill and 55 cut nail machines in a short time.

R. C. Neal & Co. of Harrisburg, Pa., who have had an option on the Hollidaysburg rolling mill for some time, have had it extended until May 1.

The Lockhart Iron & Steel Company of Pittsburgh are running their plant double turn and are well supplied with orders. They have no addition to their plant under consideration, nor do they contemplate the purchase of any additional ground as reported. Should an enlargement of the plant be decided upon, it would not be necessary to purchase more ground, as they already have a considerable lot of ground which they are not using. This concern are now paying their puddlers $4.25 a ton, or 25 cents a ton higher than puddlers receive working under the Amalgamated Association scale.

Machinery.

The Mercer Machine & Steel Casting Company have been organized at Mercer, Pa., and a works will be erected as soon as possible.

At the works of the Westinghouse Air Brake Company, at Wilmerding, Pa., it is proposed to discard the use of steam engines and substitute electric motors. The main power will be supplied by a recently patented turbine motor of 400 horsepower.

The Belle City Malleable Iron Company, Racine Wis., have completed the last part of their new factory, replacing their old foundry recently destroyed by fire. They now have all departments in full working order and are running four nights each week. Business was never so satisfactory with them as now, having more orders than they can complete.

Wickes Bros., Saginaw, Mich., boiler and machinery manufacturers, have purchased additional ground to make an extensive enlargement of their plant. They are very busy at present, having some large orders to be filled.

Pawling & Harnischfeger, Milwaukee, Wis., are building an additional erecting floor and machine shop, to provide increased facilities for the manufacture of traveling cranes. The building will be a brick structure, 50 x 125 feet, consisting of three stories and a basement. An erroneous report has been in circulation that they proposed to build a foundry.

The Hendee Wire Brush Company, Milwaukee, Wis., are manufacturing the Badger brand belt filling, for which they claim specially valuable qualities in making leather belting last longer, have a better surface and immensely increase its driving capacity by preventing belts from slipping or running unevenly on the pulleys.

The Cullen & Stock Heating & Ventilating Company, St. Louis, sales agents for the Snow Steam Pump Works, Buffalo, have secured an order from the St. Charles (Mo.) Water & Im-

provement Company for a 2,000,000-gallon six-cylinder triple expansion duplex direct acting pumping engine.

The Emerson Mfg. Company, Rockford, Ill., have decided to build a new foundry this summer.

E. C. Teuscher, formerly of Todds & Stanley Mill Furnishing Company, St. Louis, has associated himself with his son, under the firm name of Teuscher & Son Machinery Company.

The Sterling Emery Wheel Mfg. Company, Tiffin, Ohio, state that their foreign and domestic trade was never so heavy as at the present time, and orders are still coming in freely, so much so as to really be on the increase.

Bridges.

A meeting of the stockholders of the Schultz Bridge & Iron Company, McKee's Rocks, Pa., will be held in a few days, for the purpose of voting for or against an increase in the capital stock of the company. It is probable this concern will make very extensive additions to their plant, almost doubling the capacity.

Hardware.

Wormhoudt Brothers have established a factory at Ottumwa, Iowa, for the manufacture of the Day patent curry comb.

The Capewell Horse Nail Company, Hartford, Conn., are having plans drawn for large additions to their works and have placed an order for a large amount of new machinery. They refer to the outlook for business as even better than 1898.

C. A. Leffler, Berea, Ohio, manufacturer of animal pokes and Buckeye sash locks, has completed his new building and is about starting the machinery.

The Illinois Cutlery Company, Decatur, Ill., are developing an extensive foreign trade in connection with the growing domestic business they now enjoy in bread knives, slaw cutters, paring knives and other hardware specialties. It is interesting to note that their goods are now finding favor in Adelaide, Australia; Dunedin, New Zealand; Callao, Peru, and Cairo, Egypt.

The H. H. Brown Mfg. Company, Decatur, Ill., are at the close of a brisk season's business. They inform us that an interesting feature of their cattle dehorner trade has been the foreign shipments. Among the points we note Cape Town, South Africa; Christ Church, New Zealand; Sydney and Adelaide, Australia; Buenos Aires, Argentine Republic; Glasgow, Scotland.

Wrightsville Hardware Company, Wrightsville, Pa., are laying the foundations for two new buildings, which will materially increase the capacity of their plant.

The D. W. Bosley Company, Chicago, Ill., advise us that on April 1 they will ship to Holland about 20,000 feet of weather strip. The company state that they already have an established trade in Great Britain, where they have a London office, but have only recently marketed the goods on the Continent.

The New Castle Shovel Company, New Castle, Pa., have made some additions to their machinery over what was first contemplated, and are rushing their work on the new buildings so that they may be completed at the earliest possible moment.

Miscellaneous.

The entire plant and business, including patents, of the Armorite Interior Conduit Company of Pittsburgh have been sold by Wm. H. Latshaw, W. B. Rhodes and Martin M. Shaw to the Safety Conduit Company of Rankin, Pa., and the capital of the latter concern will be increased to $250,000. The output of the plant at Rankin will be largely increased and is expected to reach 50,000 feet of conduit a day. The new company will control the output of the conduits in the United States, and the industry promises to become an extensive and important one. Almost all of the large office buildings in New York and other large cities recently erected have been fitted up with conduits made by this concern. The only other large conduit company in the country is the Interior Conduit Company of New York City, and it is stated that the business of this concern may also be purchased at an early date.

The Herr Coal & Coke Company of Martinsburg, W. Va., have been granted a charter of incorporation, with a capital of $50,000 and privilege of increasing to $500,000. The company have been formed for the purpose of dealing in coal and coke, coal and timber lands and their products. The incorporators are H. B. Herr and Benjamin Snavely of Lime Valley, Pa.; D. J. Herr of Refton, Pa.; Charles E. Shank and E. B. Shank of Millersville, Pa. The principal office is to be in Martinsburg.

The Pittsburgh Reduction Company, Pittsburgh, Pa., manufacturers of aluminum, state that business in aluminum wire is growing considerably and that they are doubling their capacity for furnishing material, orders for the necessary additional equipment having just been placed.

The Washington Coal & Coke Company, with sales offices in the Conestoga Building, Pittsburgh, have placed a contract with Bennett & Talbot, Greensburg, Pa., for the erection of 150 coke ovens at Star Junction, Fayette County, Pa.

The Fox Pressed Steel Car Company, at Pittsburgh, owned by the Pressed Steel Car Company, have given their employees an advance in wages of 10 per cent.

Some large Pittsburgh coal operators have been awarded the contract to supply lines of the Vanderbilt railroad system for their locomotive coal for the year. Contracts have been apportioned between Osborne, Saeger & Co., Morgan, Moore & Bayne, H. K. Wick Fuel Company, the Sheppler Gas Coal Company and the Johnson Coal Mining Company.

The Copper & Steel Welding Company have been organized at Galesburg, Ill.; capital stock, $15,000; welding copper and steel; incorporators, Thomas W. Peterson, C. J. Munson, P. N. Granville.

The Lappan Brake Shoe Company, The Rookery, Chicago, have arranged with the Griffin Wheel Company to manufacture their brake shoes. They thus secure the advantage of the great facilities of the Griffin Wheel Company, with their leading plant in Chicago and other plants at various cities in the West, which will enable shipments to be made from the point most advantageous to the railroad company making purchases.

THE WEEK.

What will be one of the largest steel chimneys in the world is to be erected at Laurel Hill, L. I., for the Nicholas Chemical Works, which are located on Newtown Creek. According to the plans filed with the Building Department at Jamaica, the chimney is to be 315 feet high and 36 feet in diameter, and its construction will take about 231,700 pounds of steel, at a cost of $10,000.

The order for locomotives for the Midland Railway of England, recently placed with the Baldwin Locomotive Works, Philadelphia, has been followed by an order from that country for 20 locomotives, for the Great Northern Railroad of England. The order is the result of a visit made to the Baldwin Works lately by one of the directors of the last named company.

A dispatch from St. Petersburg reports that M. de Witte, the Russian Minister of Finance, addressing, a few days ago, the commission charged with the regulation of the corn trade, urged the promotion of an influx of foreign capital, which would lead to the creation of industries in Russia instead of compelling the country, as at present, to import foreign products to the amount of hundreds of millions of dollars annually.

At the Bon Air mine, at Leadville, Col., on March 10, two pumpmen working on the 430-foot level were caught by a cave-in near the top of the shaft and completely cut off. Fortunately the big water pipe was not broken by the cave-in, and by blowing a hole in it with dynamite the men were able to communicate with their friends, who kept them supplied with food while a new shaft over 200 feet deep was sunk for their rescue. The men were extricated on March 23, after 13 days' incarceration, none the worse for their remarkable experience. The cost of rescuing the men was over $3000.

Representatives of leading safe making concerns met a few days ago in New York to discuss a consolidation in the industry. It was stated that no final action was reached, but that the scheme was advanced to a stage which promises success within a short time.

The Bethlehem Iron Company, South Bethlehem, Pa., have finished the armor plates for the barbettes of the new battle ship "Illinois," amounting to 700 tons. A 15-inch plate, representing this group, will shortly be tested at the Indian Head proving grounds.

In a recent report to the State Department, United States Consul J. W. Davidson, at Tamaui, Formosa, sets forth that the Formosan Government has asked for an appropriation of $20,000,000 for the construction of a railway through the island and for the improvement of Kelung harbor. The proposed railway will extend south from Teckcham to Takow, a distance of 175 miles.

It was reported this week that a consolidation of clay sewer pipe companies embracing the leading interests in Ohio, Pennsylvania and New York had been consummated. The deal, it is said, involves the purchase of some 50 plants, many of which own their own clay beds. The amount of capital involved is placed at $10,000,000.

Lake navigation between Detroit, Mich., and Cleveland, Ohio, was formally opened on Monday, when the Detroit & Cleveland Navigation Company's steamer "City of Detroit" steamed out from Detroit harbor on the first trip of the year. Lake Erie is said to be practically clear of ice.

A new company have just been formed in St. Petersburg, Russia, with a capital of 10,000,000 roubles, under the name of the St. Petersburg Shipbuilding, Machinery & Mechanical Factories, who propose to erect large engineering works. A site for the proposed new works is reported to have been selected, and machinery will be purchased on an extensive scale. Purchases of material will, it is said, begin early in June.

The Iron and Metal Trades.

In many branches the Iron and Steel markets have quieted down somewhat. This is due in certain lines to the withdrawal of sellers pending the completion of arrangements for a consolidation of interests. In other branches it is due to the fact that buyers do not share the confidence of makers in the maintenance of present prices and are beginning to test them by withdrawal from the market. Many are now buying from hand to mouth.

In the Foundry Iron markets business has quieted down considerably, although reports from Southern markets report a further advance. Opinions vary greatly as to the capacity becoming available through the blowing in of new plants. There is no doubt that every means is being exhausted by idle furnaces to get into line.

In Bessemer Pig the market has now been re established by the sales of the association at $14.50 Valley furnace. The report that the sales of 130,000 tons to the National Steel Company and others had exhausted the supply from that source is pronounced absurd.

There has been a considerable movement lately in Foreign and Domestic Ferromanganese and the prices of the associated English and American makers have been advanced. Serious scarcity in this material is threatened. Reports indicate that additional furnaces will blow in in England.

The Steel market has been quiet, with only occasional small sales at fancy prices. The National Steel Company are reported to have sold 250,000 tons of Tin Plate Bars to their affiliated interest, the American Tin Plate Company.

The Western Steel Rail makers have made a further advance of $1 per ton and report some business.

As the season approaches increasing quantities of Structural Material for buildings and bridges are reported in the leading markets.

Prices on Hoops and Cotton Ties have been withdrawn pending the consummation of the consolidation among the mills, which is now close to a settlement. The consolidated company, who will probably be called the American Steel Hoop Company, will take in the three Pittsburgh plants, with the three blast furnaces belonging to one of them, one concern in the Shenango Valley, the Youngstown mill, which is to be transferred by the National Steel Company, and the Duncansville works. The relations between the National Steel Company and the American Steel Hoop Company are very close.

The subscription books of the consolidation of the Western and Southern Bar mills were opened to-day. A furnace property in the Birmingham district is included, but none of the Pittsburgh or Eastern mills are in the consolidation.

The Sheet mill negotiations are still hanging fire, but it is believed that ultimately something will be done with this interest.

The Tube consolidation is reported to have reached the point that subscription books will be opened in a few days.

The operations of the National Steel Company are attracting more and more attention in the trade as the comprehensive plans to control production from the Ore and Coal in the ground to the finished product are developing. Report has it that the concern have an option on one of the most famous of the Lake Superior Bessemer Ore mines, and the announcement has been just made of the purchase of a large tract of Coal lands in the Connellsville region. To their outlet in the Tin Plate trade they are now adding the Hoop and Cotton Tie industry, with a goodly share of the Skelp and other lines.

Copper has recovered from the weakening influences and has during the last few days gone back to 17.50c. for Lake, the result of a rise in the London market.

From the West come reports of some irregularity in prices of Tin Plates due to realizing on the part of jobbers.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Mch. 29, 1899.	Mch. 22, 1899.	Mch. 1, 1899.	Mch. 30, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$16.00**	$15.50	$13.50	$10.50
Foundry Pig, No. 2, Southern, Cincinnati	**14.50**	14.25	12.50	9.00
Foundry Pig, No. 2, Local, Chicago	**15.50**	15.00	13.00	10.75
Bessemer Pig, Pittsburgh	**15.15**	15.15	13.50	10.60
Gray Forge, Pittsburgh	**14 50**	14.25	12.50	9.25
Lake Superior Charcoal, Chicago	**17.00**	17.00	14.00	12.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**25.00**	25.50	22.00	15.25
Steel Billets, Philadelphia	**26.50**	26.00	24.00	17.50
Steel Billets, Chicago	**25.50**	25.50	23.00	17.50
Wire Rods, Pittsburgh	31.50	31.50	.....	22.00
Steel Rails, Heavy, Eastern Mill	**26.00**	26.00	23.00	18 00
Spikes, Tidewater	**1.70**	1.70	1.55	1.50
Splice Bars, Tidewater	**1.40**	1.40	1.30	1.15
OLD MATERIAL:				
O. Steel Rails, Chicago	**11.25**	11.25	9.00	8.00
O. Steel Rails, Philadelphia	**15.00**	14.25	12 75	10 25
O. Iron Rails, Chicago	**17.00**	18.00	14.50	12.00
O. Iron Rails, Philadelphia	**17.50**	17.00	15.00	12.50
O. Car Wheels, Chicago	**15.00**	15.00	14.50	10 75
O. Car Wheels, Philadelphia	**15.00**	15.00	13.50	10.25
Heavy Steel Scrap, Chicago	**11.25**	11.25	8.00	8.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.50**	1.50	1.25	1.05
Common Iron Bars, Youngstown	**1.50**	1.40	1.15	0.90
Steel Bars, Tidewater	**1.50**	1.50	1.35	1.10
Steel Bars, Pittsburgh	**1.50**	1.45	1 25	0.95
Tank Plates, Tidewater	**2.00**	2.00	1.70	1.10
Tank Plates, Pittsburgh	**1.85**	1.85	1.60	1.00
Beams, Tidewater	1.55	1.55	1.55	1.30
Beams, Pittsburgh	1.40	1.40	1.40	1.15
Angles, Tidewater	**1.50**	1.45	1.40	1.15
Angles, Pittsburgh	**1.40**	1.40	1.30	1.10
Skelp, Grooved Iron, Pittsburgh	**1.50**	1.50	1.40	1.07½
Skelp, Sheared Iron, Pittsburgh	**1.70**	1.70	1.50	1.10
Sheets, No. 27, Chicago	**2.65**	2.45	2.30	2.05
Sheets, No. 27, Pittsburgh	**2.45**	2.40	2.10	1.90
Barb Wire, f.o.b. Pittsburgh	**2.50**	2.50	2.35	1.75
Wire Nails, f.o.b. Pittsburgh	**2.00**	2.00	1.85	1.25
Cut Nails, Mill	**1.60**	1.50	1.40	1.10
METALS:				
Copper, New York	*17.50*	17.00	17.75	12.00
Spelter, St. Louis	**6.10**	6.05	6.00	4.00
Lead, New York	**4.37½**	4.45	4.30	3.70
Lead, St. Louis	4.20	4.27	4.20	3.55
Tin, New York	24.00	23.65	24.00	14.30
Antimony, Hallett, New York	10.00	10.00	10.00	7.75
Nickel, New York	38.00	38.00	38.00	34.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	**4.25**	4.10	3 69	2.90

Chicago (*By Telegraph.*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, March 29, 1899.

The volume of business is limited only by the supply of Iron and Steel. A great deal more would be done if it were possible to secure satisfactory deliveries. Instances are continually cropping up of important contracts actually going begging for some one to fill them. Prices continue to advance, and while the first of July is regarded as probably bringing the turn of the market in the estimation of buyers, confident predictions are made on the other hand that prices will be much higher. It is certain that orders for delivery beyond that date are steadily piling up wherever producers are willing to book them.

Pig Iron.—The week would be considered quiet compared with conditions ruling two or three weeks since. Orders are for moderate lots usually, although a good sized quantity of Southern Coke Iron has been sold to the local owners of a Pipe foundry in Ohio. Some big inquiries are in the market, but negotiations are proceeding slowly, the buyers hoping to be able to secure lower prices than those now asked. Their expectations, however, seem hopeless in view of the fact that the upward tendency of prices continues. Southern furnace companies have marked up their quotations 25c. to 50c. during the week, and Ohio Soft and Silvery Irons have gone up $1 50. The representatives of Southern companies report their principals talking very bullishly of the situation and predicting much higher prices because of the scarcity of Iron and the continued heavy demand from other markets. The local supply of Coke Iron will be increased after June 1 by the blowing in of the Calumet and Minerva furnaces. It appears at present that the additional supply thus promised will be easily absorbed. We quote for cash as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	16.00 to 16.50
Ohio Strong Softeners, No. 1	17.00 to 18.00
Southern Silvery	16.00 to 16.25
Southern Coke, No. 1	16.00 to 16.25
Southern Coke, No. 2	15.50 to 15.75
Southern Coke, No. 3	15.00 to 15.25
Southern Coke, No. 1 Soft	15.75 to 16.00
Southern Coke, No. 2 Soft	15.00 to 15.25
Foundry Forge	14.50 to 14.75
Gray Forge and Mottled	14.50 to 14.75
Southern Charcoal Softeners	16.00 to 16.50

Alabama and Georgia Car Wheel	18.00	to	19.00
Malleable Bessemer	.....	to	16.00
Standard Bessemer	.....	to	16.00
Spiegel, 20 per cent.	.....	to	30.00
Jackson County Silvery, according to Silicon	18.00	to	19.00

Bars.—A phenomenal demand is reported for both Bar Iron and Soft Steel Bars. Plenty of consumers appear to have been caught napping by the advancing prices, although many confine their purchases to small lots, hoping that a turn will soon take place, but this makes them buy more frequently. The developments of the week have disappointed them again, as prices are still higher. Mill shipments of Common Iron may be had in a few instances at 1.55c., Chicago, but more frequent quotations are 1.60c. to 1.70c. The Bar Iron consolidation is reported to be about accomplished, and the mills are therefore quite careful not to load up with much additional business. Good sales have been made of Soft Steel Bars, on which quotations are usually 1.60c. to 1.65c., Chicago, but some Pittsburgh mills are reported to have made sales as high as 1.75c. here. The Hoop manufacturers have withdrawn quotations and notified their agents to submit all inquiries direct. An excellent demand is reported by jobbers, who are receiving much larger inquiries than usual because of the difficulty in getting satisfactory deliveries from the mills. They quote small lots from stock at 1.70c. to 1.75c., full extras, for Iron or Soft Steel Bars, and 3.20c. to 3.25c. for Norway and Swedish Iron.

Car Material.—Large orders are still being placed for material for cars. One contract called for 3500 tons of Shapes for this purpose. More car orders are coming out.

Structural Material.—A heavy demand is noted for Shapes for both bridges and buildings. Orders are known to have been placed for about 10,000 tons of material for bridges and over 4000 tons for buildings to be erected in the East. Contracts are being made for good quantities of Building Shapes to be taken out during the season. The scarcity of Plates is causing engineers to avoid the use of them as much as possible in getting out specifications. Inquiries are being received for additional material for track elevation, at least 3000 tons being required for this purpose in the near future. The Cable Building, in this city, taking about 600 tons, has just been let. Prices are exceedingly firm, as previously reported, except small lots of Angles from store, 1.80c. to 1.90c., and Tees from store, 1.95c. to 2c.

Plates.—The demand is still far from being satisfied. Business is large, but it would be much heavier if anything like satisfactory deliveries could be made. Sales are reported at 2.15c. to 2.25c., Chicago, for Tank Steel for shipment from mills after July. Manufacturers are easily securing orders at 1.90c., Chicago, for shipment at their convenience. Quotations are nominal under the circumstances, as good premium is being paid for early shipment. Mill shipments, Chicago delivery, are now quoted as follows: Tank Steel, 2c. to 2.15c.; Flange, 2.10c. to 2.25c.; Marine, 2.40c. to 2.55c.; Common Fire Box, 3c.; Best Fire Box, 3½c. to 4½c.

Merchant Pipe.—Sales agents have booked large orders during the week for future delivery, as buyers have apparently made up their minds to meet the views of manufacturers, even if deliveries cannot be made until far in the future. Discounts continue at 60 and five 10's off full list of Merchant Pipe, but another advance is anticipated this week. Merchant Boiler Tubes are quoted in small lots, 1¼ to 1¾ inch, inclusive, 40 per cent. off for Iron and 45 per cent. off for Steel; 2 to 2¾ inch, inclusive, 52½ per cent. off for Iron and 57½ per cent. off for Steel; 3-inch and larger, 60 per cent. off for Iron and 62½ per cent. off for Steel, with an extra of 5 per cent. for carload lots.

Sheets.—Practically no market exists on Sheets. Manufacturers are almost unanimously withdrawing quotations and refusing to consider new business. It is probable that some mills might take No. 27 Black Sheets at 2.65c. to 2.75c., Chicago, but these prices are so close to those made by jobbers that business is being thrown into their hands to a great extent. It is stated that mills are realizing a greater difference than usual between Black and Galvanized Sheets, so that they are giving preference to business in the latter. They quote mill shipments of Galvanized at 70 and 10 to 75 per cent. off, with the usual freight allowance. Jobbers quote small lots of Galvanized at 70 and 10 per cent. off and No. 27 Black at 2.70c.

Merchant Steel.—The high prices now ruling are not completely checking business, but orders continue to be received for moderate quantities, with occasional inquiries for fair sized lots. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.30c. to 2.40c.; Smooth Finished Tire, 2.10c. to 2.20c.; Open Hearth Spring Steel, 2.30c. to 2.40c., base; Toe Calk, 2.30c. to 2.40c., base; Ordinary Tool Steel, 5.50c. to 7c.; Specials, 10c. upward. Jobbers are quoting small lots from stock at 2.60c. for Tire, 2.80c. for Machinery, 2.80c. for Spring, and 2.80c. for Toe Calk, full extras.

Billets and Rods.—Ordinary Bessemer Billets are quoted at $25.50 to $26, but no sales are reported, as the local mills are using their entire production, and outside mills appear to be completely sold up. Sales of Open Hearth Billets have been made at $31. Wire Rods are in some demand, but for early delivery, and the local producers have their output sold up to July.

Rails and Track Supplies.—Another advance of $1 was made on Saturday in the price of Steel Rails. Standard Sections are now quoted at $25 for largest lots, while small lots command $26 to $27. Sales of about 10,000 tons have been made during the week. More is under negotiation, but difficulty is experienced in arranging deliveries. Light Rails are quoted at $25 to $27, according to section. The demand for them continues, but the local mills are now sold out for three months. Track Supplies are quoted as follows: Splice Bars, 1.35c. to 1.50c.; Spikes, 1.90c. to 1.95c.; Track Bolts, with Hexagon Nuts, 2.60c. to 2.70c.; Square Nuts, 2.40c. to 2.50c.; Steel Links and Pins, 2c.; Iron Links and Pins, 1.80c. to 1.85c.

Old Material.—The market for Old Material reached its highest point last week for the present. The approaching consolidation of the Bar mills has caused the discontinuance of buying for stock, as it is likely that more or less dullness will prevail on Mill Scrap until the new organization is in working order. The supply of Cast Scrap has also become larger, the high prices having caused a larger quantity of such material to be collected. Old Iron Rails have been sold during the week at $17.50, but at present it is believed that not over $17 could be obtained. Dealers' selling quotations are nominally as follows, per gross ton: Old Iron Rails, $17; Old Steel Rails, mixed lengths, $11.25 to $11.75; selected long lengths, $11.50 to $12.50; Relaying Rails, $15 to $16; Old Car Wheels, $15; Heavy Melting Steel Scrap, $11.25 to $11.75; Mixed Steel, $9. The following selling prices are per net ton: No. 1 Railroad Wrought, $15; Dealers' Forge, $11.50; Fish Plates, $15; No. 1 Mill, $9 to $10; Heavy Cast, $12.50; Stove Plates, $7.75; Iron Car Axles, $16.50; Horseshoes, $11.50; Cast Borings, $6 to $6.50; Steel Axle Turnings, $9.50; Iron Axle Turnings, $10; Machine Shop Turnings, $7.50 to $7.75.

Metals.—Copper is steady, carload lots of Lake being held at 18c. and Western 17⅝c. Pig Lead is easier and has been sold down to 4.22½c., with but little business doing.

Tin Plate.—The volume of business in Tin Plate continues large, but some irregularities are noted, owing to the disposition of outside jobbers to force their stocks on the market. They either believe that the time has come to take their profit or find they have overbought and are obliged to sell. Manufacturers have made no change in their prices so far as can be learned.

The office of the Magnolia Metal Company, manufacturers of Magnolia Anti-Friction Metals, has been moved from the Traders' Building to the Fisher Building, 281 Dearborn street.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., March 28, 1899.

There has not been much change in the Iron and Steel situation since last week. Prices are strong, and on the whole slightly higher, but there is a more settled feeling, as though current quotations were recognized as legitimately warranted by ruling conditions. The scarcity of material for delivery during April and May is also looked upon with less anxiety, because there is a reasonable certainty of larger supplies as midsummer is approached. Nobody figures on any decline in prices, however, so that we are getting toward what may be called a settled market—comparatively so, any way. The volume of business is as large as ever, and would be larger if material could be had, but it is limited by small supplies. There is not a single department that can be excepted from this statement, which ought to be ample evidence of the satisfactory condition of business. Under such circumstances there can be only one opinion in regard to the immediate future, and that is continued activity, and continued firmness in prices. Some have an impression that prices will work higher during April and May, as there is a tremendous pressure for deliveries during that period, and whatever may be the course of the market after midsummer, it is hardly possible that there should be anything but a strong market during the second quarter of the year.

Pig Iron.—The market is steady and firm, but at the moment is not as aggressively bullish as it was during the earlier portion of the month. At about $16 for No. 2 X Foundry and $15.50 for No. 2 Plain, prices are inclined to settle as fair average figures for April or May shipments, but for the last half of the year there is a

feeling that there is at least a possibility of somewhat lower prices, consequently there is less disposition to make contracts on the basis which sellers usually demand. April and May offerings are very light, however, and for shipments any time before midsummer prices are strongly maintained. On the whole it may be said that the market is entirely satisfactory to the selling interests, as they are glad to have a respite from the continued urgency to make new contracts. There is no difficulty in getting full prices for such small lots as can be squeezed out from time to time, and for the time being that is about all that sellers care for. The list of furnaces scheduled as likely to be put in active operation during the second quarter of the year makes a formidable showing, but the increased cost of production will not permit of low prices, consequently there is a general disposition to accept current quotations as something pretty near to what are likely to rule for some time to come. There is undoubtedly more disposition on the part of sellers to consider proposals for deliveries during the last half of the year, but unless bids are pretty close to current quotations sellers have not as yet shown much disposition to accept business. Some are of opinion that it is not a bad time to average up on the year's sales, the first six months having been at comparatively low figures, so that to make anything like a good showing for the year a much higher average of prices for deliveries during the last half is indispensable. For the present sales are being made at about the following figures for seaboard or points equivalent thereto: No. 1 X Foundry, $16.50 to $17; No. 2 X Foundry, $15.75 to $16.25; Plain, $15.25 to $15.50; Standard Mill Iron, $15.25 to $15.50; Basic, $15 to $15.25; Low Phosphorus, $18.50 to $19.50.

Billets.—No business has been done of any account, as Steel is practically unobtainable. Prices are nominally $27 to $27.50 but it would be difficult to find any one with Steel for sale.

Plates.—The situation is the same as for some weeks past. The demand is far greater than the supply, consequently prices are always firm, as manufacturers can pick their trade and almost name their own prices for April and May shipments. There is a heavy demand for ship and bridge work, far more than the Plate mills are likely to accept under present conditions, as they are already crowded as they have never been before. The question of price, so far as manufacturers of Plates are concerned, has very little influence; they simply cannot take the work, and that ends it for the time being. Quotations for seaboard or equivalent points are about as follows: 2.10c. to 2.20c. for ¼-inch and thicker; Shell, 2.20c. to 2.30c.; Flange, 2.40c.; Fire Box, 2.50c.

Structural Material.—The situation is much the same as at the Plate mills. The demand is immense, and for deliveries within the next 60 days more or less of a premium has to be paid, and even then it is a favor to get some one to take the order. Nominally prices are about as follows: Angles, 1.53c.; Beams, 15-inch, 1.53c.; Tees, 1.58c.; Zee Bars, 1.57c.; Bulb and Deck Beams, 1.73c.

Bars.—There is no special change in this department. The new list of extras appears to have been adopted with satisfactory results, and at quoted prices there is an excellent demand. Mills are very much crowded with work, however, and a great many orders have been turned down, or postponed for further consideration. Seaboard quotations for carload lots and upward are firm as follows: Ordinary Bars, 1.40c. to 1.45c.; Refined Bars, 1.50c. to 1.55c.; Test Bars, 1.65c.; Steel Bars, 1.60c. to 1.65c.

Sheets.—The demand is very urgent, and although the mills are run to their full capacity, it is impossible to satisfy many of the requirements. Prices are firm at about the following figures for best makes (Common Sheets two-tenths less): No. 10, 2.60c.; No. 14, 2.70c.; No. 16, 2.80c.; Nos. 18-20, 2.90c.; Nos. 21-24, 3c.; Nos. 26, 27, 3.10c.; No. 28, 3.20c.

Old Material.—Prices have been very wild and very excited during the past week, under which some extraordinary prices have been realized. The market is far from being settled yet, but as some urgent requirements have been met, consumers have reduced their bids, although it does not necessarily follow that holders will recede from their position. The next few days will probably test the situation. Reported high sales were: Iron Rails, $18.50; Steel, $16.50; No. 1 Choice Wrought Scrap, $18; Machinery Scrap, $14. Bids and offers for deliveries in consumers' yards are now about as follows: Cast Borings, $9.75 to $10.25; Wrought Turnings, $10.75 to $11.25; Machinery Cast, $13.50 to $14; Old Car Wheels, $15 to $15.50; Heavy Steel Scrap, $14.50 to $15.50; Steel Rails, $15 to $16; Iron Rails, $17.50 to $18; No. 1 Railway Scrap, $17 to $17.50; Iron Axles, $20 to $21; Steel Axles, $16.50 to $17.50.

(By Telegraph.)

The market has a very firm tone for April and May deliveries, and prices for every class of material are exceedingly firm for the last half of the year. Pig Iron is a shade easier, buyers showing a disposition to hold off until their requirements become more urgent. Steel is scarce and has sold at about $28 for small lots, which would still be an inside figure for early shipments. There is great urgency for Plates, and in some cases business is done at higher than quoted rates, but a great deal of business is turned down because of the impossibility of making deliveries as required. The same applies to Bars, Shapes and Sheets, although in somewhat lesser degree.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, }
PITTSBURGH, March 29, 1899. }

(By Telegraph.)

Pig Iron.—As intimated in this report last week, the furnaces have practically fixed the price of Bessemer Pig for last six months at $14.50 by selling about 130,000 tons at that price, and for that delivery. Of this quantity 90,000 tons were taken by the National Steel Company, 20,000 by Carnegie, and the balance by other consumers. No sales have since been made. The market is strong at $14.50, Valley, but there is little inquiry. Gray Forge has been fairly active since our last report, and is strong at $14.50 Pittsburgh. Foundry Irons are very active and prices firm. We quote Bessemer, $14.50; Gray Forge, $13.85, both at Valley furnace; No. 2 Foundry, $15.25 to $15.50; Gray Forge, $14.50; Bessemer, $15.50, all f.o.b. Pittsburgh. We note a sale of 500 tons of Gray Forge at $14.40, Pittsburgh.

Billets.—There is very little inquiry for Steel, and, on the contrary, the mills have none to spare. Consumers are covered up to July 1 or longer, and apparently are not willing to take hold at present prices for the last half of the year. It is understood the National Steel Company are now willing to quote on Billets and Sheet Bars for last half. We note a sale of 300 tons of Slabs for April, May and June at $25.50, Pittsburgh. The market is $25 to $25.50, maker's mill, for small lots for prompt shipment.

Sheet Bars.—We do not hear of any sales, but it is probable there will be something done soon for last half of the year, as it is stated the National Steel Company are now in position to quote on Bars for last six months, having recently purchased a very large lot of Bessemer Pig.

Spelter.—Prices are about the same as last week. We quote at 6.25c. to 6.30c. for best grades, f.o.b. Pittsburgh.

Steel Rails.—Prices on Rails have again advanced and the local mill now quotes $25, f.o.b., for Light or Heavy Sections.

(By Mail.)

A few hours after our report went to press last week the Bessemer Furnace Association sold about 130,000 tons of Bessemer Pig for delivery in third quarter and in last half of the year at $14.50, Valley furnace. The National Steel Company took 90,000 tons, the Carnegie Company 20,000 tons and the balance went to other consumers. It is claimed that the furnaces have not definitely fixed a price on Bessemer Pig for last half, but decided to sell the above Iron at the price named. The sales are important, both from the magnitude and also from the fact that they determine largely the price of Pig Iron for last half of the year. With Bessemer Pig at $15 or more, Pittsburgh, it is not likely Billets will be much under $25. The statement that these sales had cornered the Pig Iron market is absurd. Aside from the above there has been nothing of an important nature during the week. Prices on all kinds of manufactured goods are exceedingly firm, but have remained practically stationary since our last report. The chief difficulty is to get goods, and there is much complaint from jobbers and small dealers on this account. The mills are as full of work as they can be, and are anywhere from two to three months behind in deliveries on nearly everything. It is a fact, however, that there has not been much done for last half of the year, and buyers are going slow in placing orders. There is a disposition to hold back and take chances on the market. It is admitted that prices on everything are extremely high and it takes a good deal of courage to cover the second half on present values. At the same time it is true that there is no disposition thus far on the part of manufacturers to make concessions in order to enter tonnage for

second half. The market all around is in an extremely satisfactory condition, and the mills and manufacturing plants generally are certainly reaping a harvest.

Ferromanganese.—Ferro is exceedingly scarce and the local producer quotes $70 at mill. Still higher prices are probable. It is claimed that foreign Ferro cannot be laid down in this city at less than the above price.

Plates.—Nothing of an important nature developed during the week. The mills are as full of Plate orders as they have been at any time in the last three or four months, and prices are very strong. Small lots of Tank for shipment within 30 days have been sold on the basis of 2c., Pittsburgh. Options on Plates for delivery in the next 90 days have been given on the basis of 1.85c., Pittsburgh. We can state that a leading local mill declines absolutely to quote, being filled up to August or later. We quote: Tank, 1.85c. to 2c., depending on delivery; Flange, 2.10c.; Marine, 2.20c. to 2.25c.; Ordinary Fire Box, 2½c.; Locomotive Fire Box, 3.25c. to 3.50c.

Structural Material.—There is a heavy tonnage being placed in Structural Material and a great deal of work is in sight. We quote: Beams and Channels, 15 inch and under, 1.40c.; 18 to 24 inch, 1.50c.; Tees, 1.45c.; Zees, 1.40c.; Angles, 1.40c.; Grooved Rolled Plates, 1.65c. to 1.75c., all f.o.b. Pittsburgh.

Bars.—There is an enormous demand and prices on both Iron and Steel Bars have further advanced, the minimum on either being 1.50c. at mill, with some sellers quoting considerably higher. It is understood that the scheme to consolidate the leading Bar mills in the West and South is practically assured of success. A slight hitch has come up, which is not serious, however. The Valley mills are full of work and running to utmost capacity, and they are considerably behind in deliveries. The same is true of Pittsburgh mills rolling both Iron and Steel Bars. We quote Iron and Steel Bars at 1.50c. to 1.60c., base, half extras.

Sheets.—The same active condition of the Sheet market noted in this report for some time continues and prices are strong. No. 28 Sheets have sold in the past week at 2.60c., cash, at mill and tonnage has been turned down at that price. There is a heavy demand from all sections of the country, but most of the mills have very few Sheets to spare this side of July. For delivery beyond that date nothing is being done, owing to the uncertainty of Bars. We quote No. 27 Black Sheets at 2.45c. to 2.50c.; No. 28, 2.50c. to 2.60c. For early delivery Sheets have sold at our higher quotations, and for spot cash at mill. The demand for Galvanized Sheets continues very heavy and another advance in prices is probable. We quote in large lots 75 per cent. off, with 15c. freight allowance. For small lots considerably higher prices are asked.

Machinery Steel.—There is a moderate amount of new business, but the mills are overloaded with tonnage placed some time ago at lower prices. We quote: Machinery Open Hearth Steel, Soft, 2c; Hard, 2.25c.; Crucible, 4c.; Spring Steel, Common, 2.25c.; Crucible Analysis, 2.75c.; Genuine Crucible, 3.50c.; Toe Calk Steel, 2.25c.; Pick Steel, Open Hearth, 3¼c.; Crucible, 4.50c.; Cant Hook, Open Hearth, 3¼c.; Crucible, 4c.; Wedge Steel, Open Hearth, 3¼c.; Crucible, 4c.; Tire Steel, ¾ x 3-16 inch and heavier, 2.10c.; Plow Slabs, 3-16 inch and heavier, 4 inches wide and over, Bessemer Open Hearth, 2.50c.; Hard Open Hearth, 3c.; Crucible Analysis, 3.25c.; Genuine Crucible, 4c.; Lay Steel, Rolled, 3¼c.; Hammered, 4c. The above prices are f.o.b. Pittsburgh.

Pipes and Tubes.—Market conditions are unchanged since our report of last week. There is a good demand for Pipe from all sections of the country and early deliveries are impossible to get owing to crowded condition of the mills. Prices are strong and are being firmly held, except by a few jobbers, who in some instances are naming slightly lower prices than established by the mills. We quote Black and Galvanized Merchant Pipe at 60 per cent. off, with five 10's additional for less than carload lots f.o.b. maker's mill, and an extra 5 per cent. in carload lots, delivered in free districts. Demand for Casing is heavy and the market is strong. We quote Screw and Socket Joint at 52½ and 10 per cent.; Inserted Joint, 52½, with an extra 5 per cent. to dealers. There is an enormous demand for Boiler Tubes, and the recent advance by the mills is, we are advised, being firmly held. We quote 1¼ and 1½ inch, Iron or Steel, at 45 per cent. off list; 1¾ to 2½ inch, inclusive, Iron, 55 per cent.; Steel, 60 per cent.; 2¾ inch and larger, Iron, 60 per cent.; Steel, 62½ per cent., with an optional 5 per cent. to dealers.

Iron and Steel Skelp.—The market is exceedingly firm and several mills are practically out of it as sellers, being sold up for the next two or three months. Prices are very strong and we quote: Grooved Steel Skelp, 1.30c. to 1.35c.; Sheared Steel Skelp, 1.60c. to 1.75c., depending on delivery; Grooved Iron Skelp, 1.50c. to 1.60c.; Sheared Iron Skelp, 1.70c. to 1.75c., all f.o.b. Pittsburgh, four months, or 2½ per cent. off for cash 30 days. We note a sale of 300 tons of Sheared Steel Skelp at 1.70c., and 1000 tons of Sheared Iron Skelp at 1.75c.

Connellsville Coke.—Last week there were 16,129 ovens in the Connellsville region active and 2514 idle, the production being 169,536 tons. Prices on Coke are exceedingly firm, and as stated in this report recently strictly Connellsville Coke for the last half of the year has sold at $1.75 at oven. We quote Foundry Coke at $1.90 to $2.30, depending on brand and also upon point of delivery.

The offices of the Washburn & Moen Mfg. Company in the Telephone Building, Seventh avenue, Pittsburgh, will be removed on April 1 to the offices of the American Steel & Wire Company, ninth floor, Tradesmen's Building, Pittsburgh. It is probable that a warehouse will be opened in Pittsburgh to carry in stock products of the Washburn & Moen Mfg. Company.

Cleveland.

CLEVELAND, OHIO, March 28, 1899.

Iron Ore.—The feature of interest in Iron Ore circles during the past week has been the evidence that the great Iron and Steel producing combinations have entered the field of lake transportation with the very evident idea of gathering together fleets of sufficient size to care for the movement of any quantity of Ore which may be required at their plants. The Federal Steel Company, the Carnegie Steel Company and the American Steel & Wire Company are the competitors in the effort to secure control of the best lake vessel property, and predictions are freely made that the result of the tendencies now manifest will assuredly be to induce a concentration of lake interests to such an extent that they will within a short time be practically in the control of the companies named and the Bessemer Steamship Company (Rockefeller interest). The fact that overtures were at one time made for the transfer of the property of the latter concern leaves it in the form of a possibility that the Rockefeller interest may eventually be merged into that of the Carnegie Company. The conditions which have been developing during several months past might very naturally have induced a desire on the part of some of the interests above mentioned for the construction of new vessels, but this has been impossible, for the reason that all the lake shipyards are so crowded with work that it is impossible to book orders for delivery earlier than 1900. That they have determined to take advantage of the next best plan and secure when possible vessels which can be purchased from owners is evidenced by the announcement that the two large steel steamers "Pennsylvania" and "Texas," building at the works of the Cleveland Ship Building Company at Lorain for A. B. Wolvin and others, have been sold outright at a price understood to be in the neighborhood of $550,000 to Pickands, Mather & Co. of Cleveland, who are understood to be purchasing for the Federal Steel Company. Negotiations have also practically been concluded for the sale to the Federal Company of the five other steel steamers of the Wolvin fleet, or the Zenith Transit Company as it is known. These latter vessels are the "Zenith City," "Queen City," "Superior City," "Crescent City" and "Empire City," and they are among the largest carriers on the lakes. The Federal Steel Company already have under their control a considerable fleet, and the addition of these boats will add materially to their resources. The American Steel & Wire Company, on the other hand, acquired quite a lake fleet by their absorption of the Cleveland Rolling Mill Company and it is understood that efforts are to be made to enlarge this by the purchase of additional vessels. Among persons conversant with the Iron Ore situation, particularly with reference to the transportation feature, there is prevalent a general impression that the ultimate result will be to force the Carnegie Steel Company to undertake on their own account the transportation of their Ore, or rather a part of it, for a considerable portion of the Carnegie Ore must of course by the stipulations of the existing contract be transported in the vessels of the Rockefeller fleet. The effect of the talk has been to strengthen the freight situation on Iron Ore and to add materially to the chagrin of vesselmen who early in the season tied up with 60c. contracts. No charters of vessels are reported, although there is no doubt that 70c. or even more could be secured. Sales of Ore continue at a heavy advance over association prices. Transfers of vessel property other than those mentioned above include the negotiations whereby W. G. Mather and other interests in the Cleveland-Cliffs Iron Company secure control of the steamer "Centurion," one of the largest lake freighters. W. A. Rogers of Rogers, Brown & Co., whose effort to secure a fleet of perhaps a dozen light draft wooden vessels for the Tonawanda Ore trade was mentioned last week, has been successful in purchasing the steamers "Gratwick," "Quito," "Veronica," "Spencer" and "Swain," and the barges "Amboy," "No. 101" and

"Pennington." His action will not, of course, have any appreciable effect upon lake freights.

Pig Iron.—The heavy sales of Bessemer Ore at prices which it is anticipated will prevail to a considerable extent for the third and fourth quarter delivery will unquestionably have a tendency to steady the market to a certain extent. Sales of No. 1 have been made at $15, Valley furnace, and of No. 2 at $14.50, Valley furnace, for immediate delivery.

Finished Material.—The past week has brought few developments in the Finished Material market. No change has been made in the quotation on Bar Iron for sales out of stock and the demand keeps up excellently. The fact that many of the firms have withdrawn all quotations on Black Sheets is regarded in some quarters as an indication of the probability of consolidation. There has been no general advance in Pipe prices, although some firms have secured as much as 60 and five 10's in car lots. The Otis Steel Company have announced a general advance of $2 on all grades of No. 12 and heavier, and quotations given are only for immediate acceptance. The demand for car Iron is immense and indeed that seems to be the most active factor in the market. In many instances special prices are being secured. No special sales of Structural Material have been reported. There has been a good inquiry for Beams and Channels and some tonnage has been sold, but at the prevailing prices. Angles, however, show some improvement, and for anything under 3 inches a quotation of 1.58½c. in car lots, Cleveland, is being made. No quotations whatever are being made on Plates, unless in very small lots, and anything like early delivery is practically impossible. The present indications are that the headquarters of the new shipbuilding combine will be established at Cleveland, which will result, of course, in all Plate being purchased here.

Old Material.—The demand continues exceedingly active, with no perceptible improvement in the available supply. Quotations are: Steel Melting, $13.50; No. 1 Wrought, $17.50; No. 1 Cast, $12.50; Iron Rails, $19.50; Car Wheels, $16.75; Cast Borings, $8; Turnings, $9.50. The demand in the East seems to be excellent and local dealers say that they have offers of better prices there than can be secured in the home market.

(By Telegraph.)

CLEVELAND, OHIO, March 28, 1899.—The American Steel & Wire Company have won out in the bidding against the Federal Steel Company and the Carnegie Steel Company for the five vessels of the Wolvin or Zenith Transit Company fleet, which were thrown on the market as the result of A. B. Wolvin's acceptance of the position of manager of J. J. Hill's new Pacific Steamship Line. The two steel steamers "Texas" and "Pennsylvania" now building were sold last Saturday to the Federal Steel Company. This seemed to have the effect of enlivening bidding on the other five boats, "Zenith City," "Queen City," "Superior City," "Crescent City" and "Empire City." All of the fleet have been constructed within the past few years and are among the largest type of modern lake craft. The purchasers paid the best of prices for the vessels.

Birmingham.

BIRMINGHAM, ALA., March 27, 1899.

The market for Iron the first half of the past week was a very quiet one, inquiries having decreased and transactions being few; but the latter half of the week was enlivened by increased inquiry and an improvement in transactions. They were scattered, so far as deliveries were concerned, all through the year. Lately those who were confining deliveries to first half of the year have taken in the third quarter. This increases the volume of business. Sales for the week were only moderate, and although some inquiries were for round lots, no information could be obtained of any sales of round lots on single orders. The action of the market would indicate that the holes are not yet all filled, and at quiet times the demand will again be renewed. The week ended with an increasing activity and prices on a parity with those of the week preceding.

It is still a difficult matter to quote absolutely correct prices. Gray Forge is yet $10.75, Foundry Forge $10.75 to $11, No. 3 Foundry $11.25, and No. 2 Foundry $11.75. For small lots buyers should expect to pay 25c. advance. There was nothing of interest gleaned concerning the export trade. Freight room is scarce at this time, and the domestic trade has snapped up so quickly all offerings that it has set the pace both for quantity and in price. The export trade has not actively followed the example. There has been some trading in warrants in small lots on a basis of $10 for Gray Forge, but the trades were of no importance.

Rumors are current concerning certain furnaces that have been idle for long years. To repair them to make them effective is practically equivalent to rebuilding them throughout, and even if this were done they would be at a disadvantage in important respects to those now in operation. But the matter is undoubtedly under consideration, with ample "sinews of war" for a backing. But the holders of the purse strings won't untie them save on a good showing for profit. Several furnaces long out of use have lately been examined with a view to being operated, but it is hardly a matter of probability that further advance will be made. Where in the district they could get Ore, Coke and flux would be a "poser."

Rumors are rife concerning the absorption of some of our large furnaces by the Federal and the American Steel Companies, the latest being that one of them is negotiating for the properties of the Pioneer Company. It is probably the Bar Iron consolidation, who desire to secure a supply of Iron for their local plants. There is considerable effort being made to increase the force of miners in the district, and labor agents are actively at work for several interests. If they could be obtained, as many as are now at work could find employment. The mining of both Ore and Coal in the district must necessarily be largely increased to supply the pending increased demand. As it is, any accident or disappointment would cause serious inconvenience. Shipments of Iron continue free, and practically no Iron is going into either furnace or warrant yards. The rolling mills continue "chock full" of business, and report, "We are going as hard as we can." In some lines there is some delay in filling orders. Such a continuous run of orders as they have had is phenomenal.

Our minor industries have taken a fresh hold on business. The withdrawal of estimates in some cases, the hesitation in others, has been succeeded by the conclusion of "the second, sober thought" that there was no profit in waiting. Business has therefore again commenced to pile up with them. The Warrior Machine Works report sale of a 2,000,000-gallon Worthington pump, to go to Bristol, Tenn., and two others of 1,000,000 gallons each, with engines to drive them; also one of 500,000 gallons for local account.

The Means-Fulton Company have obtained the contract for erecting a cast shed for the Sloss Company, the dimensions being 168 x 52 feet. They have also a contract for two boiler houses, 95 x 45 and 66 x 45 feet, for the same company, and for one of the mines two large air receivers. Some few have all the orders at present that they desire, while there are efforts being made to divert some Cuban business to this point. The local enterprises projected will furnish a large amount of work to these industries, and their prospects for a busy summer are very bright. In all lines of building there is activity, and improvements of a substantial character greet the eye on every hand.

Properties that a few months ago would not be considered are now being investigated, and in some cases negotiations for transfer are nearing completion.

(By Telegraph.)

The Iron market is 25c. better, with sales of Basic Iron at $11 and No. 2 Foundry at $12. The market is only moderately active.

St. Louis. *(By Telegraph.)*

Office of *The Iron Age*, 512 Commercial Building, ST. LOUIS, March 29, 1899.

Pig Iron.—A somewhat quieter feeling is shown this week. Buyers have had some wants filled, but have not been overly aggressive in their demands. Undoubtedly consumers think that the present prices cannot hold out, but a study of actual conditions at furnaces would bring a change of opinion. There has been no change in the nominal quotations of last week, but it is said that present prices will hardly be quotable two months from now. As a general thing consumers fear that their usual purchases made to the middle of the year will prove under actual requirements. Makers of agricultural implements are drawing heavily on their stock yards in anticipation of favorable crop conditions. Machine builders are reported several months behind deliveries, and every concern using Pig Iron experience an active demand. Nominal prices, f.o.b cars St. Louis, are as follows:

Southern, No. 1 Foundry	$15.00 to $16.00
Southern, No. 2 Foundry	15 00 to 15.50
Southern, No. 3 Foundry	14.50 to 15.00
No. 1 Soft	15.50 to 16.00
No. 2 Soft	15 00 to 15.50
Gray Forge	14 00 to 14.50
Mottled	13.75 to 14.25

Bar Iron.—A good volume of trade is seen, and inquiries are freely made. The buyers' efforts to get in under the market result in the refusal of considerable business which must crop out again in the near future, when prices will be even higher. The contract for several thousand freight cars has been successfully closed, and it develops that the St. Louis lines are getting their

rolling stock in better shape than ever. Nothing definite has come to the surface about the proposed Bar mill consolidation, but the market holds stiffly to 1.50c. to 1.60c., base, half extras, in car lots from mills. Jobbers quote small lots 1.70c. to 1.75c., base, full extras.

Track and Rail Supplies.—There is a marked movement of general railway materials and activity in contractors' tools and supplies. An unusually heavy snowfall has temporarily checked outdoor work, but no embarrassment has occurred to train service. Rails of both light and heavy sections are known to be in good demand. The recent advance, while not an assurance of quicker delivery, will stimulate buying in the face of the increasing prices of raw material. Track Supplies are quoted as follows: Splice Bars, 1.50c. to 1.60c.; Track Bolts, with Square Nuts, 2.30c. to 2.40c.; with Hexagon Nuts, 2.40c. to 2.50c.; Spikes, 1.80c. to 1.90c.; Iron and Steel Links and Pins, 1.80c. to 1.90c.

Sheets.—More than one mill is said to be out of the market, and it is a task to run down quotations. In every instance mills pass upon specifications, and agents have no free hand as to delivery or price. No. 27 Black are said to be 2.50c. in carload lots, East St. Louis. If scarcer than scarce is possible Galvanized Sheets may be so considered. The demand is excellent, and mill quotations are tightened to 75 per cent. off, with the shrinkage in the former freight allowance. Jobbers quote 70 and 10 per cent. off from store, with a smaller discount imminent.

Pig Lead.—Advance sales at the higher prices of last week are reported by fortunate refiners. Actual transactions have not been uncovered to-day, but the market is considered strong at 4.20c. to 4.22½c.

Spelter.—Some heavy foreign sales have been recorded, and the opinion advanced that a strong demand and price exists abroad. Spelter has been sold at 6.10c. and higher within the past few days, and the market is looked upon as justifiably firm. The Ore association has successfully maintained the 60 per cent. Ore at a base of $42 per ton, with Spelter at 6c., and sales of that grade of jack were made even at $43.

Cincinnati. *(By Telegraph.)*

Office of *The Iron Age*, Fifth and Main streets,
CINCINNATI, March 29, 1899.

A much quieter condition prevails in the Pig Iron market. Some agents even regard the situation as decidedly dull in comparison with two weeks ago. There has been, however, quite a fair volume of small business and every offering for early delivery is snapped up as soon as presented on the market. The larger buyers appear to have settled down with the intention of taking the market as they find it when their needs are more urgent than they now are. From a seller's standpoint the situation is still exceedingly strong, and there is no bear element predicting lower prices anywhere in the near future. If the next Pig Iron statement as published in *The Iron Age* shows a material decrease in stocks there will be another advance in prices, but until the date of that publication there will hardly be any further upward movement. There are no soft spots in the price-list. No. 1 Foundry and Soft are especially strong and scarce. Ideas regarding prices vary, some agents claiming sales at 25c. ahead of to-day's quotations, while others quote transactions at 25c. less. Thus sales of No. 2 Foundry are reported at prices ranging from $11.25 to $12, Birmingham. Furnaces, especially those South, are still behind in their deliveries and complaint on that line shows no abatement. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	....	to	$15.00
Southern Coke, No. 2	....	to	14.50
Southern Coke, No. 3	....	to	14.00
Southern Coke, No. 1 Soft	....	to	15.00
Southern Coke, No. 2 Soft	....	to	14.50
Southern Coke, Gray Forge	....	to	13.25
Southern Coke, Mottled	....	to	13.25
Ohio Silvery, No. 1	....	to	16.00
Ohio Silvery, No. 2	....	to	15.50
Lake Superior Coke, No. 1	....	to	15.50
Lake Superior Coke, No. 2	....	to	15.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	$15.25	to	$15.75
Lake Superior Car Wheel and Malleable	15.75	to	16.25

Plates and Bars.—It is very hard to arrive at anything like a fair estimate of values. There has been an advance since last week, but the market is so irregular as to render quotations of small value. Each order is treated by itself and mills here can select or reject to their hearts' content. Plates have been sold as high as 2¼c., and Bar Angles at 1.75c. All architectural material is hard to get.

Old Material.—Offerings are not heavy and the general market is quite strong. Axles and Iron Rails are especially strong. Prices are irregular, though fairly represented in the following quotations, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $14 to $14.50 per net ton; Cast Scrap, $10.50, gross; Car Wheels, $14, gross; Iron Axles, $19, net; Iron Rails, $16; Steel Rails, $11.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, March 29, 1899.

Pig Iron.—The market has quieted down considerably and there is on the part of buyers a disposition to withdraw in order to test its strength. While a good deal of Iron is being sold for delivery during the second half at present prices, it is a fact that Iron has been at offered at quite a material reduction to good buyers for later delivery. The sales of warrants at the Consolidated Exchange include: On the 23d, 100 tons No. 4, $9⅞; on the 24th, 100 tons No. 2 at $11; on the 25th, 100 tons No. 2 at $11⅛; on the 27th, 300 tons No. 2 at $10⅞, and 300 tons No. 2 at $10¼; and on the 28th, 300 tons No. 2 at $10¼ and 300 tons No. 4 at $9½. We quote as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, $16.25 to $16.75; No. 2 X, $15.50 to $15.75; No. 2 Soft, $15.25 to $15.50; No. 2 Plain, $15 to $15.25; and Gray Forge, $15.25 to $15.50. Southern brands are quoted: No. 1 Foundry, $15.75 to $16.25; No. 2 Foundry, $15.25 to $15.75; No. 1 Soft, $15.25 to $15.50; No. 2, $15 to $15.25; and Gray Forge, $14.50 to $15.

Cast Iron Pipe.—On the Brooklyn order for about 3000 tons a contractor was the lowest bidder, but it is not yet known whether the work has been definitely awarded. While there is a good run of moderate sized orders the only larger block in sight is one of about 2000 tons for delivery at Newark, N. J.

Steel Rails.—Current business is light, no sales of any consequence being reported by Eastern mills. We continue to quote $26 to $28 for Standard Sections at Eastern mill.

Track Fastenings.—We quote: Angle Bars, 1.35c. to 1.40c.; Spikes, 1.70c. to 1.80c.; and Bolts and Nuts, 2.10c. to 2.20c.

Finished Material.—Quite a number of good sized contracts have been placed lately, including the material for the Weston Building at Newark, 400 tons; the Tucker Building, 600 tons; a building on 124th street, 825 tons; a warehouse, 380 tons, and a building calling for 500 tons. The larger structures are 4200 tons for the Stokes Building on Seventy-third street, and the Battery Park Building, 2000 tons, placed with a Chicago firm. The market continues exceedingly firm on Plates and on Structural Material. On Hoops and Cotton Ties the quotations have been withdrawn pending the consummation of the consolidation. We quote as follows: Beams, 1.55c. to 1.65c.; Angles, 1.45c. to 1.50c.; Universal Mill Plates, 2c. to 2.15c.; Tees, 1.55c. to 1.60c.; Channels, 1.55c. to 1.60c.; Steel Plates are 2c. to 2.10c. for Tank, 2.05c. to 2.15c. for Shell, 2.30c. to 2.35c. for Flange, 2.40c. to 2.45c. for Fire Box and 2.45c. to 2.50c. for Locomotive Fire Box, on dock. Refined Bars are 1.40c. to 1.50c. and Common Bars are 1.25c. to 1.35c., on dock. Soft Steel Bars, 1.50c. to 1.55c.; Steel Axles, 2.50c. to 2.75c.; Scrap Axles, 1.75c. to 1.90c.; Links and Pins, 1.65c. to 1.70c.; Hoops, nominal: Best Iron Boiler Rivets, 2.25c. to 2.50c. delivered; Steel Structural Rivets, 1.85c. to 1.90c.; Cotton Ties, nominal.

A. R. Whitney & Co., agents of the Carnegie Steel Company, have taken new offices in the Empire Building.

The American Steel & Wire Company have removed their offices to the Empire Building, occupying the whole of the twentieth floor.

The U. S. Cast Iron Pipe & Foundry Company have established their New York offices at 80 Broadway.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, March 29, 1899.

Pig Tin—Gained strength during the week, and prices advanced from 23.65c. to 24c. Closing quotations to-day range from 24c. to 24.15c. for spot and nearby delivery. Demand from consumers improved considerably, and a little business went through. The London market while but steady on Thursday, Friday and Saturday advanced on Monday, and closed to-day £109 11s. 3d. for spot and £110 2s. 6d. for futures. This is an advance of almost £2 above last week.

Copper.—During Thursday, Friday and Saturday this metal was still weak, and there were several sales made at 17c. With Monday's quotations a firmer feeling prevailed, and prices advanced rapidly to 17.50c. The price asked to-day is 17.50c. to 17.75c. for Lake Superior Ingot. Electrolytic Wire Bars, Cakes and Ingots

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING MARCH 29, 1899.

	Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
Am. S. & W., Common,	126,153	64 -65	63 -64⅝	63⅜-64⅝	65 -66⅛	64⅜-66¼	63⅛-64⅞
Am. S. & W., Pref.	14,175	103 -103½	103 -103⅜	103¼-103½	101⅞-103	101½-102¼	100¼-101⅞
Col. Fuel and Iron	25,056	35 -35⅞	-35⅛	36 -36¼	36⅜-37⅜	36 -37¼	35½-37
Federal Steel, Common	439,997	52⅜-53½	52⅞-53⅜	53⅝-55	56 -61¼	61⅜-63⅝	59⅞-62¾
Federal Steel, Prefer.	103,312	87¼-87¾	87⅜-87⅞	87⅞-88¼	88⅛-89⅞	88¾-89⅞	88⅛-90½
Tennessee Coal and Iron	60,855	52 -53	52 -52⅞	52½-53	52¾-54⅜	53⅞-54⅜	52½-54¼
Cambria Iron, Phila*	1,046	-46½	-46½	.....	.....	-46½	.. ..
Cambria, Scrip**	.....	.....	.....	.....	.....	.....	.....
Cambria, Steel***	24,634	23¾-24½	23¾-24¼	24⅛-24¼	-24½	24⅛-24½	24 -24⅝
Penna. Common, Phila.	2,941	51¼-57	54½-55¼	-54½	55 -57	56 -57	-56¼
Penna. Prefer., Phila.	189	-75	-76	.....	-80	80 -81	-80
Tin Plate Common, New York.	24,205	41¼-41⅞	41⅝-41⅞	41⅝-42	42 -43½	43⅞-45¼	43 -44¼
Tin Plate Preferred, New York.	640	94½-95½	.....	.....	.....	94⅞-95	95¼-95½
Tin Plate Com., Chic.	20,215	41¼-42	41¼-41¾	41¼-41⅝	42 -43¼	43 -45	42⅝-43⅜
Tin Plate Prefer., Chic.	1,279	-95	95 -95¼	94⅝-95¼	95 -96	95¼-96	95 -95⅜
National Steel Common, Chic.	89,507	43⅛-45½	44 -45	45 -46	45⅞-50⅛	50 -54	50 -52
National Steel Preferred, Chic.	21,571	90¼-92	91 -92	91⅞-92½	92½-95	91⅛-95½	92½-94
National Steel, Common, N. Y.	32,885	.....	.....	.....	.....	51 -54¾	51 -53½
National Steel, Preferred, N. Y.	570	.....	.....	.....	.....	-95	.....

* Par $50. ** Par $100. *** $1.50 per share paid in. Late Philadelphia and Chicago sales by telegraph.

was held at 17c. to 17.25c., and Casting Stock brought 16¾c. to 17c. London took a sudden jump on Monday, and went up £3, closing to-day at £69 8s. 9d. for spot, and £69 12s. 6d. for three months' futures. Best Selected advanced to £74, which is an increase of £2 above last week. This sudden London advance is regarded as a mystery in the trade, and in most quarters is credited to Copper stock speculation. Exports from this side have been large, and amount to 9525 tons so far this month, but as we have previously indicated these shipments are made on the strength of old contracts.

Pig Lead—The market here is dull and easy with very little doing. Spot receded from 4.45c. to 4.37½c., which is the prevailing quotation here to-day. Sales for shipment to the West are, however, reported as low as 4.35c. In the West the market is firmer, and St. Louis quotes 4.20c. to 4.22½c. It is stated that about 1000 tons were sold in the West last week at 4.17½c. London advanced a shade, and came to-day £14 8s. 9d. At the close it declined, and was quoted £14 6s. 3d.

Spelter—Is quiet and unchanged at 6.30c. to 6.40c for spot. Sales are reported for shipment from the West at 6.30c. It is stated that galvanizers are not in the market and are covered for some time to come. London has advanced to £27 15s., which is 5 shillings above the quotation of last week. The position of the Ore market is unaltered and the miners are apparently holding out strongly at $43.50. They seem to be standing together well, and it is generally predicted that there will be no weakening for some weeks. Although numerous new claims are being put in shape for operation now, it is not probable that they will be in condition for mining until June at the very earliest. There are also several new smelters nearing completion, and these will be in operation as soon as any of the new Ores can be gotten out of the mines.

Antimony—Is without change and prices remain: Hallett's firm at 10c.; Cookson's, 10c. to 10¼c., condition firm.

Nickel.—There has been no change and the business, which consists almost entirely of small lots, is going through at 38c. to 40c., according to quantity and delivery.

Tin Plates.—Business during the last week has been in better shape than for some weeks back. Several very good orders are reported and it looks as though the new company were in better shape to handle the business than at any time since their formation. Steel is apparently coming their way and they are more disposed to sell. Prices remain unchanged and on standard sizes are on a basis of 4.05c. to 4.10c. for 100-lb. Cokes, delivery latter half of this year. It is altogether probable that the company will be selling spot goods in all standard sizes for May delivery soon.

By Telegraph.—Local press items published in many parts of the country during the past few weeks have given the impression that the American Tin Plate Company were unable to secure sufficient supplies of steel for present and future deliveries, and that a consequent shortage of supplies in tin plate is threatened. It is officially stated to-day that while supplies of steel were short during January and February, temporarily delaying shipments of tin plate, the condition is now changed. The American Tin Plate Company have promise of abundant supplies of steel for the balance of the year, and the capacity to provide for any possible requirements for tin plates or other of their products.

Iron and Industrial Stocks.

The features of the week have been the enormous sales of the Federal Steel issues, at a sharp advance. The sales of common amount to 440,000 shares. In American Wire the common has held its own, but the preferred has fallen to close to par. Nothing definite has been learned relative to the results of Mr. Gates' trip abroad. It is reported, however, that his stay will be longer than at first contemplated. Pennsylvania Steel has had an advance on rumors of a plan for providing working capital. The Tin Plate issues have advanced during the week.

The National Steel issues were placed in the unlisted department of the New York Stock Exchange, and sales began on Tuesday, the dealings being heavy. During the week a heavy advance was scored.

There has been, relatively, considerable activity in the stock of the Bethlehem Iron Company recently. On Monday about 600 shares ($50 par) were sold at 145 to 146. On Tuesday over 1000 shares sold at 148 to 150. The directors are holding a meeting to-day to decide upon the new plan.

The following are the closing quotations on a number of stocks:

International Silver, Common	27½ to 28
International Silver, Preferred	80
Mich.-Peninsular Car, Common	43
Mich.-Peninsular Car, Preferred	94
Mich.-Peninsular Car, First 5s	110
Otis Elevator, Common	36
Otis Elevator, Preferred	90
H. R. Worthington, Common	50
H. R. Worthington, Preferred	115
Cramp's Shipyard Stock	76
Pratt & Whitney, Common	3¼
Pratt & Whitney, Preferred	35
E. W. Bliss, Common	138
E. W. Bliss, Preferred	125
U. S. Projectile	90
Barney & Smith Car, Common	..
Barney & Smith Car, Preferred	..
Pressed Steel, Common	64¾
Pressed Steel, Preferred	88½
American C. & F., Preferred	70 to 70¼
American C. & F., Common	31⅛ to 31¾
Pressed S. Car, Common	63½ to 64
Pressed S. Car, Preferred	89½ to 89¾

The Cincinnati Axle Company.

A new company, to be known as the Cincinnati Axle Company of Cincinnati, Ohio, were incorporated under the laws of the State of New Jersey last week. The object of the company is to manufacture vehicle axles and the capital is $25,000.

Charles T. Ritchie, president of the British Board of Trade, has officially announced that the Government will not proceed with the bill making it compulsory on all British railroad companies to adopt within five years the American automatic coupling system.

The decision of the stockholders of the Hollingsworth & Whitney Company of Winslow, Maine, to increase the capital stock of the concern from $2,000,000 to $4,000,000 and double the present capacity of their paper plant will give them the largest paper mills in the world. The output of the enlarged plant will be 75 tons of paper a day.

The North River Heat, Light & Power Company, Hoboken, N. J., intend to erect a 1500 horse-power station in Hoboken. One-third of the equipment has been ordered.

The furnace of Carbon Iron & Steel Company at Parryville, Pa., blew in on Monday.

Coke and Charcoal Iron for Malleable Castings.—I.

BY ERASTUS C. WHEELER, DAYTON, OHIO.

From the earliest records of malleable cast iron founding, and until within a few years ago, there was seemingly an unwritten law, or understanding, that charcoal pig iron was the only safe material in this particular branch of the art. This feeling has not by any means been entirely removed, for there are many, principally the smaller, concerns who still hold steadfast to their ideal. If coke iron had been proposed 15 years ago as the foundation for the mixture, and the heavy percentages of scrap now carried had been suggested, it would have been pronounced impracticable to produce a marketable article. There is no branch of the iron industry to-day which carries along, year after year, the stock of accumulated hereditary convictions as the malleable casting. There has occurred within the experience of many foundries a condition arising from the fact that the exhaustion of the supply of a certain brand of iron caused the closing down of works until that stock was replenished. The present day does not always find all concerns free from this embarrassment. The greatest progress in the art has been made by the larger concerns, whose executives have been awake to the knowledge that the charcoal producing capacity was not equal to supply one-quarter of the tonnage. Where years ago the mixture was all charcoal iron, now 25 per cent. is all that can be carried with the factor of continuance in view. The smaller concerns have not been forced to realize this fact as yet, and are still holding coke iron at some distance. It will be the endeavor of this article to deal with some of the comparable qualities in each iron and present some deductions gathered from experience, with particular reference to coke iron, which is at present receiving such favorable appreciation owing to the inability of charcoal producers to meet the demands.

Which is the better iron? It must be confessed that, if there were enough charcoal iron produced, coke metal would not now be considered, even taking into account what was its first credential—namely, cheapness. The differences between charcoal and coke iron are not distinguishable from the appearance of the fracture, although there is, of course, the well recognized shape of the pig to mark them. Those who have made up their mixtures from the fracture of the pig can with their experience detect some peculiarities, but to the average person they appear greatly alike. There is no decided difference in the size of crystals in a coke or charcoal No. 1. The heat conditions have been very nearly the same during their production. Yet in reality there exist some marked qualities affecting their compositions and physical characteristics. The difference in quality of fuel used during the reduction of the ore, and the variance in purity of the ores charged into furnaces, are to a great extent responsible for the resulting variance in the pig metals.

Looking at both from a chemical standpoint, there is no great noticeable difference in their compositions, barring sulphur.

	Silicon.	Sulphur.	Phosphorus.	Manganese.	C. Carbon.	G. Carbon	Total carbon
Charcoal, No. 1	2.20	0.005	0.240	0.42	0.30	3.32	3.62
Coke, No. 1	2.50	0.025	0.182	0.75	0.37	3.30	3.67

The influencing element in these irons is without doubt the carbon. In charcoal furnaces the blast is introduced at lower temperatures and in connection with the fuel promotes a reduction which hastens the formation of carbonic oxide gas in great quantities. The pressure of the blast in charcoal furnaces is considerably less than in coke stacks, and the importance of this might be illustrated by the fact that when an ordinary air furnace is run upon very low wind pressure the iron produced will be far superior than when poured under a higher blast. High pressure, whether in blast furnace or the ordinary air furnace, has a most decided tendency to burn the metal, and burnt iron always makes dirty castings. Cold blast at low pressure accounts for the very successful castings of more than one concern. Coke iron is produced in much shorter time than charcoal, the blast being heated to a very high degree and introduced into furnace at high pressure. The quality of fuel used is also inferior, when compared with the charcoal. There have been under observation some few brands of coke iron which after melting in air furnaces, and while being refined, have been known to slag off enough dirt to warrant apprehension of results. Dirt in iron is not caught by the gates on castings. No matter how thin they may be cut, it will flow along with the metal, and upon cooling is forced to the surface of castings by the occluded gases liberated during the casting operation. There has always been an idea that dirt rose to the surface of ladles and could be skimmed off. But this theory has been disproved; dirt does not "give up" so easily. Again, in the malleable metal will be found a curious phenomenon—*i.e.*, when a large ladle of metal has been thoroughly skimmed and made ready to pour, if the same is then allowed to stand for a while small black bubbles will be observed breaking upon the surface of the metal, and gradually a small covering of slag or dirt will collect. Surely this does not come from the fact that the ladle may be still "green," as some very eminent foundrymen have been quoted; rather it is dirt or slag rising to the surface, being lighter than the iron. This curious condition arises only in the case of a very hot metal; a dull metal is naturally denser in its molten state. Dirt in dull metal shows itself very clearly, but not in the ladles. If pig iron could be thoroughly refined in its initial casting this condition would not occur.

An experiment along these lines resulted in the following novel features: Two pigs were selected from casts, one of which was produced while the furnace was working abnormally hot, and the other under favorable conditions, though not as hot. The complete chemical analysis did not vary enough to record, including percentage of metallic iron present. The two bars were placed in a planer and brought down to exactly the same dimensions. The pig made under the excessive heat conditions weighed 72 pounds 7 ounces, the one under the colder working 73 pounds, a difference of 9 ounces. The grain or fracture showed a slight variance, the higher thermic condition producing a trifle more open grained. Here was a difference of 9 ounces to be accounted for. Could we attribute all of this increased weight to the condensed or higher specific gravity of the metal made under the lower heat conditions? If the metal made under the high thermic state had absorbed some of the thin liquid slag then developed without taking up any noticeable quantities of its chemical impurities, one might call some of this deficiency in weight dirt, which at the ratio mentioned would amount to about 18 pounds per ton, which in a 10-ton heat would make a large barrowful.

In following up the original argument, this dirt or slag made under high temperature will separate only under a correspondingly high remelting heat. In the pig of lower casting heat, and where the density is greater, we might argue that this dirt has not had the opportunity of affiliating with the molecules, but has been slagged off in its entirety. Dirt, therefore, in castings is not always the result of molders' carelessness or improper skimming, but rather at times dirty initial iron.

There is a circumstance in the malleable industry which is of more importance than its corresponding condition in the gray iron art—namely, an article of good appearance must be presented to the commercial consumer, and a dirty casting has no place. What must be said of castings which in the hard iron are pronounced perfect, and after passing through the anneal present large dirt holes upon their surface? Would it be fair to reason that this defect was caused by a bubble of gas below surface of casting? It could be gas or dirt which had forced itself outward until it met with the resistance of only a very thin coating of metal which had chilled from contact with the sand, before the center of casting was permanently set. Coke iron has always been, and will perhaps continue to be, an iron containing more material impurities than the charcoal metal. From its origin this cannot be avoided. Charcoal iron has the initial advantage of being produced in a much slower manner. This last fact cannot be side-tracked when comparison is made with coke.

The very finest and purest pig iron made in the world is produced in Northern Europe from selected woods charred for fuel and where the smelting operation is from 15 to 22 hours longer than in America. The question of comparison, with reference to the impurities of charcoal and coke irons, opens up the field for discussion. In looking over the analyses of each we find the nearest approach to similarity when the furnaces are working hot, and with the decreasing temperatures the analyses broaden, but we find the charcoal gaining as regards the quality of material. The coke iron is fast absorbing sulphur from the fuel, while the charcoal is merely reducing its silicon; and the other impurities (barring carbon) are remaining practically stationary. With the charcoal No. 3 comes the ideal iron for the regular malleable casting of to-day. There is no question raised at the present writing but that just as perfect malleable can be made with an all coke mixture as with charcoal. This has been demonstrated beyond a doubt, but at the same time there is always a question in the manufacturer's mind which causes a great hesitancy in his saying that he can get along without charcoal iron, yet he would make malleable forever without

a pound of coke metal at hand. The railway supply, furnishing the largest tonnage for malleable plants at present, offers for casting a variety of patterns, some of which are so placed upon cars as to be responsible for the safety of humanity in general. There should nothing enter into the composition of couplers and their kindred castings but materials which are known to be distinctly first class. We find in coke iron a metalloid which destroys to a certainty the best iron—viz., sulphur. There can never be that feeling of safety to a conscientious concern when using coke iron (unless they use it half and half with charcoal) as when using an all charcoal burden. An all charcoal mixture will invariably produce a material after anneal black and velvety, with just the suspicion of a white edge or skin, which latter a great many users believe is the only part of the casting malleableized. The question is often asked, How deep do you anneal? The charcoal mixture should always be worked slowly in the furnace to attain the highest results, and as there is no great amount of either manganese or sulphur present to facilitate the combination of the carbon the heat of the blast flame must take care of this important feature. If tests are hurried they will be misleading, often showing combined carbon when in reality the metal is still gray. Charcoal iron requires the exercise of more judgment in furnace working than the coke to maintain the principles of its initial production.

(To be continued.)

The American Ship Building Company.

(By Telegraph.)

CLEVELAND, OHIO, March 29, 1899.—All the moving spirits in the American Ship Building Company, the consolidation of lake shipbuilders, held a meeting in this city on Tuesday, at which further details were perfected. No officers were elected, but it is now decided that the headquarters of the new company will be at Cleveland. The definite organization will not be perfected before the middle of April, but there would seem now to be no doubt of the consummation of the project, unless some hitch should develop relative to the selection of officers. The capital stock of the company will be $15,000,000 instead of $30,000,000 as has been announced, and it may be stated for a certainty that no stock will be on the market; indeed, no outside interests whatever will be represented, the whole plan having been engineered by the chief stockholders in the constituent companies.

The Hoop Iron and Cotton Tie Consolidation.

A movement to which allusion has been made before is culminating in the hoop and cotton tie industry. A company are being formed, who will probably be called the American Steel Hoop Company, who shall include the plants and properties of J. Painter & Sons' Company, William Clark Sons' Company and Lindsay & McCutcheon, all of Pittsburgh; the Monessen Steel Company of Monessen, Pa.; the P. L. Kimberly Company of Sharon, the Portage Iron Company, Limited, of Duncansville, Pa., and the Union Iron & Steel Company of Youngstown, Pa. The latter concern, who were purchased some time since by the National Steel Company, will be transferred to the new organization. In fact it is understood that the Moore Brothers of Chicago are promoting the enterprise and that a number of men identified with the National Steel Company will be on the board of directors. The new company will also take over the Isabella Furnace Company of Pittsburgh, with three stacks, and the coal lands and coke ovens of that interest. It is understood that a working arrangement is to be made with the Federal Steel Company on cotton ties. It is probable also that the Export Iron & Steel Company will be merged with the new concern. We understand that the total tonnage of hoops and cotton ties amounts to about 400,000 tons, that of the cotton ties being estimated at 50 000 tons annually. Some of the plants in the consolidation also make skelp, to the amount of about 250,000 tons per annum. Considerable quantities of bars and other rolling mill products are also handled. It is believed that very important economies can be effected by assigning the straight hoop business to such a continuous mill like the Union and distributing the tonnage effectively. So far as raw material is concerned the close relations with the National Steel Company seems to assure a supply, the latter company on their part securing a very important outlet for tonnage.

German advices announce that there will be held at Dusseldorf, in 1902, an important exposition which is being organized by the Northwest group of "German Iron and Steel Industrialists" and the Society of German Iron Workers. The exposition will represent the great industrial interests of Rhenish-Westphalia. The city of Dusseldorf has granted the sum of $1,000,000 for a site.

New Sheet Mill Project.

It is reported that Pittsburgh capitalists are preparing to build a large sheet mill at Chester, W. Va., opposite East Liverpool, Ohio, a company for the purpose being incorporated with a capital of $250,000 under the laws of West Virginia. Among those named as interested in the enterprise are C. W. and J. R. Trimble and W. N. Voegtly, former owners of the Pittsburgh Tin Plate Works, at New Kensington, Pa. and William Eberhardt, formerly of the brewing firm of Eberhardt & Ober, who sold out to the brewing trust. The plant, it is said, will be erected on a 380-acre tract of land, a large portion of which the new company have secured. The size of the factory has not yet been definitely decided upon, but it will probably have six mills at the commencement of operations. Samuel Diescher of the Hamilton Building, Pittsburgh, is preparing the plans. The product will be iron and steel sheets. Specialties in black iron will also be manufactured.

The Cast Iron Pipe Combination.

The United States Cast Iron Pipe Company have completed their organization, and have formally assumed control of the various properties embraced in the consolidation. The company are capitalized at $30,000,000, equally divided between preferred and common stock. Of this amount $12,000,000 of each class is issued. The following Board of Directors has been elected: Colgate Hoyt, A. C. Overholt, B. F. Overholt, L. R. Lemoine, George B. Hayes, C. E. Nurke, E. C. Fuller, W. C. Proctor, B. F. Haughton, George J. Long, A. F. Callahan and F. C. Miller. Eleven of the directors are manufacturers. Colgate Hoyt represents the Rockefeller interests, who are among the largest stockholders. The following officers have been elected: President, A. C. Overholt; vice-president, A. F. Callahan; secretary, B. F. Haughton; treasurer, George B. Hayes. President Overholt has been chairman of the National Foundry & Pipe Works, Limited, Scottdale, Pa. Mr. Callahan has for many years been connected with the management of Denis Long & Co., Louisville.

At Pittsburgh, on Monday, March 27, contracts amounting to about $1,000,000 were awarded by S. E. Gill and directors of the Parral & Durango Railroad Company of Mexico for material and labor for the construction of the railroad. The contract for furnishing the bridges was awarded to the Shiffler Bridge Company of Pittsburgh. It is not yet definitely known how many or what length of bridges will be needed, as the plans and estimates have not been completed. The order for the tie plates, spikes and other fastenings was given to Dilworth, Porter & Co., Pittsburgh, and the contract for two locomotives was placed with the H. K. Porter Company of that city. An order for two more locomotives was placed with the Baldwin Locomotive Works of Philadelphia. The rails will be made by the Colorado Fuel & Iron Company of Pueblo, Col.

It is reported that the management of the National Steel Company has practically decided to build one new blast furnace at Bellaire, Ohio, another at Mingo, Ohio, and that the plant of the Shenango or old Norway furnaces at New Castle, Ohio, is to be equipped with additional machinery and stores to keep both of their alternate stacks running.

The Central Freight Association has refused to make a reduction in freight rates on iron and steel products shipped to New York for export from the Cleveland, Pittsburgh, Wheeling and Valley mills. The manufacturers some time ago asked the railroads to make a reduction on this class of business, but it has been refused on the ground that the heavy advances in prices warrant the full tariff rates.

The National Machine & Tool Company of Portland, Maine, have been incorporated, with a capital of $50,000, by James H. Reed, Alfred L. Barrett, Brookline, Mass.; Heber C. Peter, Dorchester, Mass.; Henry C. Peabody, Portland.

The W. D. Kent Company, Chicago, Ill., formerly of South Jefferson street, that city, have removed to 216-222 North Union street. They have been making many changes and improvements in the plant, and their new foundry will have a much larger capacity than the old one, the additional capacity being necessary to meet the growing demands of their business.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, March 29, 1899.

Advances in prices are now being talked of and arranged by the machinery supply trade. Manufacturers of power transmission machinery report an abundance of work and are withdrawing quotations. Instances have been pointed out where orders have been turned down at prices which were quoted but a short time ago. Cold rolled shafting has been advanced something like 25 per cent. since the first of this year. It is said that the association discounts have narrowed down from 60 per cent. to 35 per cent. Turned steel finished shafting is also advancing. The George V. Cresson Company report an advance of from 10 to 15 per cent. all along their lines. The Dodge Mfg. Company, A. & F. Brown and several other concerns are now notifying their agents of an advance and are withdrawing all quotations previously made. All of these companies report that their stocks of raw materials are about exhausted and that now they are at the mercy of the material merchants. One manufacturer put it in this way: "As long as our stocks of materials, which we purchased when the market was easy, held out we gave our customers the benefit of our low purchases, but as they are exhausted now there is nothing for us to do but to advance prices in proportion to what we are compelled to pay for material." In twist drills, gear cutters and formed cutters the position is very strong, but as far as we can learn there has been no official notification of an advance sent out. The L. S. Starrett Company have increased the price of various sets of machine tools. Hangers, iron and steel pulleys, &c., are now undergoing an advance. Manufacturers of conveying machinery are also getting in line, and we learn that the Link-Belt Engineering Company and Jeffrey Mfg. Company are arranging a notification for the trade of a decrease in their discounts. The Webster Mfg. Company have withdrawn all quotations and are now quoting at higher figures, subjecting all quotations to immediate acceptance.

The composition valves have advanced about 40 per cent., and the manufacturers of the special styles of valves are also quoting an advance proportionate to that in materials. It is said that the Prentice Brothers Company of Worcester, Mass., have added to the price of their drills and that an advance of about 10 per cent. has been made by the Builders' Iron Foundry of Providence, R. I. The prices of return tubular boilers have been advanced considerable, owing to the advance in price of tubes.

A communication which we received from Chicago and print elsewhere is to the effect that a meeting has been held in that city for the purpose of consolidating the wood pulley manufacturers. Members of the trade here admit that they have heard that such a combination was on the carpet, but claim to be ignorant of any definite steps having been taken by their companies toward actual organization.

W. J. Lewis and F. J. Wich, engineers for the Linotype Company, Limited, of England, are now in this country. They are stopping at the Murray Hill Hotel at present and expect to remain here at least the balance of this week. Messrs. Lewis and Wich are visiting the large printing press manufactories, machine shops and linotype plants here. They have made a tour of the shops of the Niles Tool Works Company, at Hamilton, Ohio, and also the Pond Machine Tool Works, at Plainfield, N. J. They are also taking data, prices, &c., regarding American machinery, and the company will soon be in the market for a considerable quantity of machinery, as a large addition will be built to their plant at Broadheath, near Manchester, England. The main offices of the company are located in London. Upward of 1200 men are employed at the works at Broadheath. The visit of Messrs. Lewis and Wich will doubtless lead to the purchase of American equipment for the new plant.

Henry S. Lowd, manager of the Mariopol-Nicopol Mining & Metallurgical Company of Mariopol, Russia, who purchased a large amount of machinery in this country about a year ago, is now in America on the same mission. We understand that he is now in the Pittsburgh district, but that he will return to New York within a few days. Mr. Lowd has previously made his New York headquarters at the Waldorf-Astoria Hotel. The works which are being constructed at Mariopol will probably be the largest steel works in Russia. During his last trip he purchased numerous large tools from Manning, Maxwell & Moore, together with an open hearth equipment. This trip, we understand, is for the purpose of purchasing a Bessemer plant and slabbing mill. It is said that Mr. Lowd has placed a large order with the Morgan Engineering Company of Alliance, Ohio. Julian Kennedy, who is consulting engineer for the company, has recently returned from Mariopol, and last week he placed an order with McIntosh, Hemphill & Co. of Pittsburgh for two large engines.

The Standard Air Brake Company of 168 Broadway, New York, are said to be in the market for machine tools for additional equipment of their plant, which is located on Bay street, Jersey City, N. J. A. J. Breslin, who is located in the New York office, is said to be purchasing the equipment. The original installation of the Jersey City plant was made but a short time ago, and it is said that the company have recently secured a very large order. This necessitated the addition. The company are operating in opposition to the Westinghouse interests, and their financiering is being attended to by J. & W. Seligman, local bankers.

Additional equipment is being purchased by the Manhattan Oil Motor Company for enlarging their plant at 307 Whiton street, Jersey City. This company own the American rights for the building of the Captaine motor. They have recently purchased numerous machine tools in this market. G. Waldron Blake is the manager of the Jersey City plant, and is superintending the enlarging of the plant.

The Cleveland Twist Drill Company are building an addition to their plant at Cleveland.

The General Electric Company of Schenectady, N. Y., will build an addition to their press department.

T. J. Nicholl of Rochester, N. Y., has been appointed managing director of the Pratt & Whitney Company. F. G. Echols, who has for some time been manager of the small tools department, will in addition assume the management of the sales department.

The Hudson River Electric Light & Power Company are said to be arranging for the erection of a 2000 horse-power station.

The American Steel & Wire Company awarded contracts for half of the 12,000 horse-power boiler installation last week.

A contract for 3200 horse-power was awarded to the Sterling Company, and the 2800 horse-power order was given to the Cahall Sales Department.

The Fuel Economizer Company of 72 Cortlandt street and Matteawan, N. Y., were awarded a contract for 1000 horse-power of economizers, to be installed in the new plant of the Atlanta Consolidated Street Railways Company of Atlanta, Ga. Manning boilers have also been ordered. Induced draft will be installed.

The Riter-Conley Mfg. Company of 39 and 41 Cortlandt street and Pittsburgh, Pa., received a contract for building a steel power station and stack at Bristol, England, for the Bristol tramways. The station will be similar to the one which the American company erected at Dublin recently.

The order for high pressure double hex. end unions and fittings for the new Ninety-sixth street power station which the Metropolitan Street Railroad Company are erecting was awarded to the Eastwood Mfg. Company of 120 Liberty street and Belleville, N. J. This company also received contracts for the valves and fittings for the new Bourne Building, which is being erected at 85, 87 and 89 Liberty street, also for high pressure work in connection with Koehler's Brewery, Twenty-ninth street and First avenue, and for high pressure valves, unions and fittings for the New York Navy Yard at Brooklyn.

A four-story addition is being built to the works of the Joseph Dixon Crucible Company, Jersey City, N. J. The building will be used for the manufacture of pencils. The company expect to build a very large addition to their crucible plant during the summer.

An order has been received by the Lidgerwood Mfg. Company of Brooklyn, N. Y., and 96 Liberty street, for a hoisting plant for handling coal near Christiania, Norway. The plant is to be installed within one month of the award of contract.

The Prindle Pump Company have just completed a large shipment of pumps to Yokohama, Japan. Takata & Co. were the purchasers.

We have received the following from the Universal Winding Company of Providence, R. I.: "We are about to install new machinery, and would be pleased to receive catalogues and price-lists from tool and machine makers, principally lathe, milling machine and drill makers."

Regarding the Buffalo, N. Y., municipal gas plant, R. G. Parsons, secretary Board Public Works, writes us the following: "Nothing definite has been done regarding the municipal gas plant for this city. The plans were ordered by the Common Council, in order to ascertain what would be the estimated cost of such a plant, the $2,500,000 mentioned covering the cost of piping the whole city, as well as the plant itself. The Committee on Estimates for the various departments will make a recommendation to the Common Council to-day that $200,000 be added to the lighting appropriation for the city as a starter for the proposed municipal gas plant, but whether or not this will be adopted I cannot say."

The Cincinnati Machinery Market.

Office of *The Iron Age*, Pickering Building,
CINCINNATI, OHIO, March 24, 1899.

It has been several years since the shops engaged in the production of wood working machinery have been so active as they are to-day. There has been a very noticeable increase in business within the past 30 days. Some shops which were short of orders are now working to their limit, and buyers who had no difficulty in purchasing machines two months ago are finding it hard to secure prompt delivery at this time. Not only that change in the general conditions confront buyers, but they are also finding prices stronger and higher than at the date of previous orders. The situation in the iron trade is by this time becoming pretty well understood and reconciled to, and better prices are easily obtainable. Most of the machine shops are covered by contract for castings at much lower than the current rates, and many of them are supplied with other materials sufficient to last several months. The foundries are now getting ⅛ to ¼ cent advance, but many of them are poorly fixed with pig iron supply for the contracts taken three months ago.

In iron working machinery the situation has not changed very greatly. Orders keep piling up, and now there is hardly a shop in this district that is not sold ahead at least three months. Many are unable to promise delivery on new orders for five or six months. The most disagreeable feature of the situation is intensified, as each incoming mail brings a storm of complaints from purchasers whose orders have been on the books for weeks untouched. The only mitigation for this unpleasantness is that all are alike companions in the general misery.

Word has just been received here that the long worked for consolidation of the pipe interests has at last been consummated, and the stockholders of the Addyston Pipe & Steel Company are to receive their equivalent for the $1,500,000 which represents the fixed value of their plants. A strong effort is being made, with a very fair degree of probable success, to have the headquarters of the consolidated company located in this city.

While business at the Architectural Iron Works is very much improved, and a very good share of current contracts are being landed by Cincinnati concerns, yet this line of business is not destitute of troubles, as well as other iron trades. There is a very positive famine in material, and prices and deliveries are so uncertain as to make bidding a difficult undertaking.

Among the recent contracts taken by the L. Schrieber & Sons Company are the following: Iron car barn, 100 x 300 feet, for the Covington Street Railway Company, Covington, Ky., and a steel addition, 100 x 100 feet, to the Block & Pollak Forge Works, at Carthage, Ohio. The contract for the new hydraulic brewery for N. Thoma, Dayton, Ohio, also comes to the same works.

Smith, Myers & Schneier, builders of saw mill engines and machinery, report a satisfactory increase in orders and a good volume of work in sight yet to be taken in by some one. All the lumber districts throughout the South are being heard from, and, in addition to orders for complete outfits, the trade in a small way is excellent. They have just supplied a wagon making plant, at Louisville, Ky., with a complete 6-foot band saw mill. A 16 x 20 engine has just been shipped to Grider, Ark. A 7-foot band mill has just been contracted for by a Catlettsburg, Ky., firm. The most striking order recently booked, however, is one for a 16-foot iron frame veneer mill, to be shipped to Manzanilla, Cuba. This order came to the firm in answer to direct advertising.

The J. A. Fay & Egan Company are busier than for several years past, and, in addition to a full complement of men, have been obliged to abandon the customary half Saturday holiday and work full 60 hours per week. The company are finding an excellent trade in saw mill machinery, the manufacture of which they have very recently taken up.

The Cordesman-Meyers Machine Tool Company are among the concerns who report a very marked increase in active operations within the past two or three weeks. They are finding trade excellent in most planing mill and furniture districts.

The Cordesman Machine Company have been spending considerable time and money lately in getting out some new machines, and for these they are getting plenty of orders. They say that the distinguishing feature of the market is, perhaps, the great manifestation of interest toward anything in the way of a new idea. They report trade much brisker with the Northern and Northwestern planing mill districts. They are just completing arrangements for the sending of a special agent to Europe to represent their machinery in those countries which are now promising well in this direction. There is lots of domestic business in sight, and better prices are obtainable than were 60 days ago.

The Bickford Drill Company are just completing the details of their reorganization, and within the next ten days expect to give the result to the public. In the meantime they are working full time and force, with order books well filled for the most expensive tools they make.

In passing the shops of the American Tool Works Company a day or so since your correspondent noticed two very large machine tools being loaded for shipment. One of them was a 30 x 36 foot shafting lathe, the bed of which was made in two sections for easy transportation. It was marked St. Petersburg, Russia. The other tool was a 54 x 24 foot motor driven lathe for the Chicago Ship Building Company.

The Laidlaw-Dunn-Gordon branch of the International Steam Pump Company have just completed the shipping of the last of six carloads of pumping machinery to China. Their agent in the Orient is finding trade good. They have also booked within the past week an order for 19 pumps, to go to Russia. They have just contracted two high duty pumping engines to the Lorain Steel Works, Lorain, Ohio; a compound Corliss air compressor for Doe Run, Mo., and a compound pumping engine to go to the same place. The contract for the high duty pump for the Washington, D. C., Post Office Building has just been filled by this company. A $30,000 contract with the Monongahela Water Works plant has recently been taken; a high duty engine has been sold to the Lebanon Furnace Company, Lebanon, Pa., and a large air compressing outfit, to be delivered at Evansville, Ind.

The Hawley Down Draft Furnace Company report the following recent contracts: Two furnaces for the Snider Preserve Works, one for the Morrison & Snodgrass planing mill and two additional for the Fleischman distillery, all of this city; two additional for the Wadsworth Salt Company, Wadsworth, Ohio; six for the American Oak Leather Company, this city, and six for the American Oak Extract Company of Pennsylvania; 16 additional for the American Steel & Wire Company of Cleveland, making a total of 42 installed for this company.

Pig Iron Producing Capacity.

There has been published in the *Bulletin* of the American Iron & Steel Association a very interesting statement in detail of the recent and the prospective additions to pig iron producing capacity. The figures show that since the opening of the year 16 furnaces have blown out to March 10, with a capacity of 10,740 tons per week, and that 14 were blown in with a weekly capacity of 10,121 tons. The year started with a rated capacity of 247,500 tons, according to the estimate. The American Iron & Steel Association from direct correspondence with the producers enumerates 48 furnaces which blew in since March 10 or which, according to their owners, were expected to blow in after that date, in March, April or May. The list includes also one large furnace which is expected to blow in during June. In that manner a total capacity of 39,972 gross tons is to be added. That is certainly a large amount, but there is one very important point which has been overlooked, and that is the very uncertain one how many furnaces now running for a long time will be forced out for repairs during April and May. It is in this that all statistical prognostications break down utterly. During January, February and a part of March, according to the showing of the American Iron & Steel Association, furnaces with a capacity of 10,740 tons blew out for repairs. It is to say the least not unreasonable that for the next 10 weeks a like capacity will be rendered temporarily idle. That reduces the capacity estimated to be available by 10,000 tons per week, and cuts a hole into 40,000 tons per week. Besides delays are likely to cause a later blowing in than the owners of stacks figure on. Still, with all these limitations, it is quite clear that there will be a very large addition to output during the next few months.

The Wood Pulley Manufacturers.—The leading manufacturers of wood pulleys are endeavoring to effect a consolidation of their properties. A meeting was held in Chicago on the 23d inst. for this purpose. Among the firms represented were the Reeves Pulley Company of Columbus, Ind.; the Kease Pulley Company of Toledo, Ohio; the Dodge Mfg. Company of Mishawaka, Ind.; the Manashe Pulley Company of Maysville, Ky.; the Buckeye Pulley Company of Marion, Ohio, and the Fulton Pulley Company of Fulton, N. Y. The corporation will be chartered under the laws of New Jersey.

The employees of a number of furnaces in the Mahoning and Shenango Valleys have demanded an advance in wages of 10 per cent., to take effect May 1. These men were granted an increase in wages of 10 per cent. about a month ago.

The American Car & Foundry Company.

An official circular signed by W. K. Bixby, president of the American Car & Foundry Company, states that the constituent companies are the following:

Michigan-Peninsular Car Company of Detroit, Mich.
Jackson & Woodin Mfg. Company of Berwick, Pa.
Missouri Car & Foundry Company of St. Louis, Mo.
Ohio Falls Car Mfg. Company of Jeffersonville, Ind.
Union Car Company of Buffalo, N. Y.
St. Charles Car Company of St. Charles, Mo.
The Wells & French Company of Chicago, Ill.
Terre Haute Car & Mfg. Company of Terre Haute, Ind.
Buffalo Car Mfg. Company of Buffalo, N. Y.
Niagara Car Wheel Company of Buffalo, N. Y.
Ensign Mfg. Company of Huntington, W. Va.
Murray, Dougal & Co. of Milton, Pa.
Minerva Car Company of Minerva, Ohio.

The total annual capacity of the American Car & Foundry Company is: Passenger, 500 cars; freight, 90,000 cars; wheels, 900,000; pipe, 30,000 tons; bar iron and axles, 90,000 tons, and castings, 130,000 tons.

Mr. Bixby states: Orders on the books of the company to-day aggregate over 37,000 cars and 375,000 wheels, besides a large tonnage of bar iron, axles, pipe and castings, the profits on which will exceed the estimate above named. Should the business for the entire first fiscal year continue at the present rate, which seems altogether probable, the profits for the year will approximate $6,000,000, an amount equal to 7 per cent. on the preferred and 13 per cent. on the common.

The present general prosperity of the country, which is producing excellent earnings for the railroad companies, is encouraging them to renew greatly and increase their equipment. We have, since the consolidation, received large orders for cars from the Erie Railroad, Lehigh Valley Railroad, Pennsylvania Railroad, Lake Shore & Michigan Southern Railway, Pittsburgh & Lake Erie Railroad, Minneapolis & St. Louis Railroad, Columbus & Hocking Valley Railway, and Missouri, Kansas & Texas Railway, besides important lesser orders from several smaller roads.

A number of important inquiries have been received from foreign countries and some experimental orders are now being executed. I believe that our foreign trade will eventually equal at least one-quarter of our present output, and especial consideration is now being given to the organization of a foreign department. It is my intention to create a thoroughly competent staff to introduce our products into many fields where agents of ours are at present engaged in preparatory work.

Slag Cement Manufacture in Alabama.

An undertaking highly interesting in itself and of much significance to the iron trade is the establishment at Birmingham, Ala., of a plant for the manufacture of Portland cement. The enterprise has been initiated by J. D. Cheever of Poor & Greenough and a company have been formed under the title of Birmingham Cement Company. A plant is to be built at the Ensley furnaces of the Tennessee Coal, Iron & Railroad Company. It is to have an initial capacity of 1000 barrels per day, to be subsequently enlarged. The plant, for which machinery is now being ordered, is to be completed in four months. The arrangement of the cement company with the furnace plant is that they shall deliver a certain quantity of slag, granulated, at 50 cents per ton, the granulating to be carried out under the supervision of the cement company. A very important feature to the cement maker is that he has the right, under specified conditions and with certain limitations, to direct the burdening of the furnace producing the slag. The use of limestone as a flux is prescribed, since the use of dolomite has a serious effect upon the quality of the cement.

It is estimated that the cost of manufacturing the cement will be about 75 cents a barrel, while the cost of the barrel will be about 15 cents. Cement has sold at a minimum of $1.45 per barrel, so that a large profit will be made.

It is proposed to issue $100,000 of 6 per cent. 25 year gold bonds, $100,000 6 per cent. cumulative preferred stock and $200,000 of common stock. An important advantage to the new company is the fact that no cement is made in the South, so that the new concern have a large share of the Southern field.

Portland slag cement has been thoroughly introduced in this country, first by the importations of German and other slag cements and since by the Maryland Cement Company of Sparrow's Point, Md., and the Illinois Steel Company of Chicago, the latter now increasing their capacity. Slag cement has been used very largely for Government work, the tests having proven satisfactory.

The new enterprise will be under the charge of J. L. Given, who has built and operated a similar establishment, and the new company are to have the right, in their territory, to manufacture a new article—cement iron piling—with which very promising experiments have been made during the past year.

One point is made in connection with cement manufacture from blast furnace slag, and that is that it can only be carried out in a satisfactory manner when a group of furnaces is available, because it is only then that the necessary selection of the slag can be made in sufficient quantity to secure economic production.

Weights of Aluminum, Steel and Copper Sheets.

The following table, giving a comparison of the relative weight of aluminum, steel and copper sheets, is published by Janney, Steinmetz & Co., Drexel Building, Philadelphia:

Weight, per square foot, of Sheets.

Gauge No. B & S.	Thickness in inches.	Aluminum.	Steel.	Copper.
0000	0.46000	6.494	18.700	20.838
000	0.40964	5.781	16.660	18.557
00	0.36480	5.148	14.830	16.525
0	0.32486	4.584	13.210	14.716
1	0.28930	4.082	11.760	13.105
2	0.25763	3.636	10.480	11.671
3	0.22942	3.238	9.330	10.393
4	0.20431	2.884	8.310	9.2522
5	0.18104	2.567	7.400	8.2419
6	0.16202	2.286	6.590	7.3395
7	0.14428	2.036	5.870	6.5359
8	0.12849	1.813	5.220	5.8206
9	0.11443	1 615	4.650	5.1837
10	0.10189	1.438	4.140	4.6156
11	0.090742	1.281	3.690	4.1106
12	0.080808	1.140	3.290	3.6606
13	0.071961	1.015	2.930	3.2598
14	0.064084	0.9044	2.160	2.9030
15	0.057068	0.8054	2.320	2.5852
16	0.050820	0.7172	2.070	2.3021
17	6.045257	0.6388	1.840	2.0501
18	0.040303	0.5688	1.640	1.8257
19	0.035890	0.5064	1.460	1.6258
20	0.031961	0.4511	1.300	1.4478
21	0.028462	0.4017	1.160	1.2893
22	0 025347	0.3577	1.030	1.1482
23	0 022571	0.3185	0.918	1.0225
24	0 020100	0.2837	0.817	0.91053
25	0.017900	0.2526	0.728	0.81087
26	0.015940	0.2294	0.648	0.72208
27	0.014195	0.2004	0.577	0.64308
28	0.012641	0.1785	0.514	0.57264
29	0.011257	0.1589	0.458	0.50994
30	0.010025	0.1414	0.408	0.45413
31	0.008928	0.1260	0.363	0.40444
32	0.007950	0.1122	0.323	0.36014
33	0.007080	0.1000	0.288	0.32072
34	0.006304	0.0890	0.256	0.28557
35	0.005614	0.0792	0.228	0.25431

Weight, per cubic foot, Rolled Metal.

Aluminum 169.5 Steel 490.4 Copper 558.1

The South Chicago Furnace Company.

The South Chicago Furnace Company organized at Chicago on Monday under the laws of Illinois, with a paid up capital stock of $300,000. They have purchased the old Calumet Iron & Steel Company's entire plant at Cummings, near South Chicago, consisting of about 60 acres of land, a blast furnace and a rolling mill, the latter being capable of producing various shapes of bar iron, bar steel, nails and spikes. The new company immediately put a force of workmen on the plant to get it into working condition as rapidly as possible, expecting to have the blast furnace in operation by June 1, and the balance of the plant as rapidly thereafter as possible. The work now being done is for the purpose of putting the entire plant into the very best modern shape with the expectation of making all the products of which it is capable. The records show that the price paid for the plant is about $400,000 cash. The officers of the company are as follows: William L. Brown, president; D. M. Cummings, vice-president; B. W. Wells, secretary and treasurer, and Fred. H. Foote, consulting engineer. The directors are William L. Brown, D. M. Cummings, Charles Deering, Walter F. Cobb and Charles H. Foote. The blast furnace product will be sold by Pickands, Brown & Co., and the other products by the company. New machinery in all parts of the plant where necessary and a supply of iron ore, coke, limestone and other essential materials for the operation have all been contracted for.

This disposes of the rumor that the property has been purchased by the Federal Steel Company, and it is officially stated that neither that company nor any other have any connection with this plant in any shape or manner, but it is a separate and distinct operation exactly as set forth above.

Bradlee & Co. of Philadelphia have recently completed for Charles J. Colonna of Norfolk, Va., for use on his Marine Railway, one piece of 2¼ inches, D. B. G. Special, side welded marine railway chain, 725 feet in length, weighing approximately 30,000 pounds.

HARDWARE.

Condition of Trade.

THE general tone of the market continues strong, with an active demand for goods. The state of the Iron market is such as to necessitate advances in many lines, and this has the effect of giving a marked firmness to prices and at the same time stimulating trade. In some kinds of goods there is a good deal of complaint on the part of manufacturers of difficulty in obtaining raw material, and with the generally liberal purchases there are some indications that a number of goods will be hard to get before the season is over. From the report which follows of the special features of the market it will be seen that several advances are announced. In goods in which large advances have been made in price the trade are buying with caution and the market will be tested as to its real and permanent strength when the trade are obliged to buy new stocks at new prices. In the meantime both jobbers and manufacturers find a much more favorable condition of things than for a long time, and with prudent management and conservative methods business should be large and profitable. From the retail trade reports are also encouraging, although retail business generally throughout the country does not in all cases show activity corresponding to that prevailing in manufacturing and jobbing circles. There is, however, doubtless a very hopeful feeling and an evident improvement, with the prospect of a good trade during the season.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report continued heavy business. Their trade during March has been much beyond that usually observed in this month. It is rather remarkable that no complaint has been heard of bad roads or mud blockades. These have caused more or less interference in the March movement in Hardware in other years. Jobbers are looking forward to April and May as months of even greater activity than March. Screws were advanced during the week from 87½ to 85 off, which is a jump upward of 20 per cent. Sheet Zinc, which had been marked down ¼ cent, has been advanced again to 8 cents for 600-pound casks of 36-inch sheets. The Steel Sheet trade is in a peculiar condition owing to the refusal of many manufacturers to quote prices. Jobbers fortunately have good stocks on hand, but these stocks are now being drawn upon from unusual sources, and will be likely to be rapidly reduced. A very good movement is reported in staple goods of all kinds. The high prices have not checked the demand for Wire Nails or other Wire products. Poultry Netting is in good supply, not being as scarce as in previous years at this time, although the hight of the season is yet to come. Heavy Hardware jobbers report an unusually good volume of business, finding an excellent demand for all kinds of Wagon Stock and Carriage Material, as well as Iron and Steel.

St. Louis.

(By Telegraph.)

The month's business has been highly encouraging. No particular line seems to have forged ahead in the demand. Tinware and Sheet Metal Stamped Ware of all kinds show advances, and are bringing about 15 per cent. better prices. The business in this particular line of manufacture is said to be in volume just what makers care to book, as in other branches of the Metal trade. Buyers are fondly hoping that good sized orders sent to makers on basis of old discounts will be snapped up. As showing the tone of the market it must be said that such orders do not meet with acceptance. Makers of Stamped Goods believe prices of Tin Plate will not be immediately lowered. Builders' Hardware is finding buyers for quick use and retail stocks are moving more freely. Paints, Oils and Varnishes stocks are being put in good shape and larger sales are looked for. The Wire Cloth situation is no brighter and manufacturers of Screen Doors now quote new prices. The Heavy Hardware trade is enjoying a fine trade and much more is promised with the advent of spring.

Notes on Prices.

Wire Nails.—The situation in Wire Nails is substantially the same as last week, there having been no further change in prices, with a continuance of a good demand. The market is represented by the following quotations, f.o.b. Pittsburgh or Cleveland:

To jobbers in carload lots	$2.00
To jobbers in less than carload lots	2.02½
To retailers in carload lots	2.05
To retailers in less than carload lots	2.15

As natural under the circumstances Nails are still in some cases obtainable from second parties at lower prices than are now being named by the manufacturers, who are very firm in maintaining prices, goods being in most cases, especially to the smaller trade, sold at a figure which includes freight to destination.

New York.—A good tone characterizes the market in New York and vicinity and merchants report a good demand with a prospect of increase as the season advances. The prices regularly named as based on the manufacturers' quotations are as follows: Carload lots on dock, New York, $2.15 to $2.20; small lots from store, $2.30 to $2.35. These are in some cases shaded.

Chicago, by Telegraph.—Manufacturers have had an excellent trade, which shows no signs of diminution. They continue to quote carload lots at $2.15, Joliet and De Kalb. Jobbers quote small lots from stock at $2.25 and also state that they are enjoying a good volume of business.

St. Louis, by Telegraph.—The market is unchanged on Wire Nails and demand continues good. Manufacturers' carload quotation to jobbers continues $2.15, St. Louis. Jobbers are selling small lots at $2.25 to $2.30.

Pittsburgh —Conditions in the Wire Nail market are unchanged. Mills of the American Steel & Wire Company are busy, mostly on orders booked before the last advance, and the movement in Nails is heavy. Jobbers report a large demand from the small trade, and the outlook is that the volume of business in Wire Nails this spring will be the heaviest ever known. We quote Wire Nails as follows: To jobbers in carload lots, $2; to small buyers in carload lots, $2.05; to retailers in less than carload lots, $2.15, f.o.b. Pittsburgh or Cleveland. It should be noted that taking effect Saturday, April 1, the minimum weight of carload lots of Wire Nails will be 30,000 pounds instead of 24,000 pounds as heretofore.

Cut Nails.—The Cut Nail market is decidedly firm and prices are quotably higher than a few weeks ago. The market in a general way is represented by the quotation of $1.60 to $1.65 for carload lots f.o.b. Pittsburgh, but

some manufacturers are naming slightly higher prices. The Eastern manufacturers have been conferring with reference to measures which will secure a more uniform market in their territory.

Chicago, by Telegraph.—No change has been made by jobbers, who continue to quote $1.65 for small lots from stock.

St Louis, by Telegraph.—No startling sales can be reported in Cut Nails. They meet with an even sale just now at $1.65 for small lots from store.

Pittsburgh.—The volume of business in Cut Nails is fairly large and prices are strong. Mills anticipate a good spring trade. We quote at $1.60 to $1.70 in carload lots f.o.b. Pittsburgh.

Barb Wire.—The indications are that the demand for Barb Wire during the season will be very heavy and there are already indications of a prospective shortage. There has been no change in price since our last issue, the manufacturers' quotations being as follows, f.o.b. Pittsburgh or Cleveland:

To Jobbers in carload lots,	Painted	$2.10
" "	Galvanized	2.50
To Retailers "	Painted	2.15
" "	Galvanized	2.55
" in less than carload lots,	Painted	2.25
" " " " "	Galvanized	2.65

These prices are sometimes cut more or less freely, but the trade generally are disposed to hold Wire firmly in view of the strictness with which prices are maintained by the manufacturers and the prospect that the demand will be large.

Chicago, by Telegraph.—The demand for Plain Annealed Wire is exceptionally good, but the movement of Barb Wire is not so large as it was. Manufacturers expect a falling off in the demand for Barb Wire at this time and until out door work is actively resumed. They quote carload lots Painted Barb Wire $2.25, Joliet or De Kalb; Galvanized, $2.65, and Smooth Annealed, $2, base. Jobbers quote small lots from stock at 10 cents per 100 above these prices and report a continued heavy business in Plain Wire, but some falling off in the demand for Barb Wire.

St. Louis, by Telegraph.—The usual movement on Barb Wire is noted. Stores have a good stock in readiness for quick use at $2.40 in small lots. Galvanized can be had at an advance of 40 cents per 100 pounds.

Pittsburgh.—There is a fair movement in Barb Wire and a considerable increase in demand is looked for in April. We quote to large buyers in carload lots: Painted, $2.10; Galvanized, $2.50; to small buyers in carload lots, $2.15 for Painted; Galvanized $2.55; to small buyers in less than carload lots: Painted, $2.25; Galvanized, $2.65, f.o.b. Pittsburgh.

Smooth Wire.—Quotations are as at our last report, being represented by $1.85, base, for Plain Wire, f.o.b. Pittsburgh or Cleveland, and $2.25 for Galvanized. To single carload buyers the price is 5 cents higher. There is already a heavy movement of Smooth Wire, with the prospect that the consumption this year will be materially larger than last year, which broke former records.

Pittsburgh.—There is a heavy demand and there is some complaint from consumers over delayed shipments. The tonnage in Smooth Wire this spring promises to be the heaviest ever known. We quote at $1.85, base, with 40 cents advance for Galvanized. To single carload buyers the price is $1.90, base, and for less than carload lots $2, f.o.b. Pittsburgh or Cleveland.

Bright Wire Goods.—The manufacturers of Bright Wire Goods have adopted a revised list, which goes into effect April 1. This list is given below. It will be observed that it is materially lower than the late list and is subject to much smaller discount, the result of the new list and discount being a further advance in the prices of goods. The new list is as follows, subject to a discount to the general trade of 40 and 10 per cent.:

BRIGHT WIRE GOODS.

Revised List April 1, 1899.

Screw Eyes

Nos.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Steel, per gross	$2.50	2.30	1.80	1.40	1.10	.95	.75	.65	.55	.50	.45	.40	.35	.33	.30
Brass "	20.00	16.00	12.50	10.00	8.00	6.50	5.00	4.00	3.00	2.50	2.00	1.75	1.25	1.00	.83

Nos.	104	105	106	107	108	109	110	111	112	113	114	114½	115	115½
Steel, per gross	$0.95	.85	.65	.60	.50	.45	.40	.35	.30	.30	.30	.30	..	..
Brass "	7.00	5.75	4.50	3.75	2.75	2.25	1.75	1.50	1.15	.60	.70	.70	.70	.70

Nos.	204	205	206	207	208	209	210	211	212	213	214	214½	215	215½	216½
Steel, per gross	$0.90	.75	.55	.50	.45	.40	.35	.30	.27	.27	.27	.27	..	.32	.35
Brass "	6.00	5.00	4.00	3.25	2.50	2.00	1.60	1.30	1.00	.80	.60	.60	.60	.60	.60

Nos.	106½	107½	108½	109½	110½	111½	112½	113½	212½	213½
Steel, per gross	$0.70	.65	.55	.50	.45	.40	.35	.35	.32	.32

Screw Hooks.

Nos.	0	1	2	3	4	5	6	6½	7	8	9	10	11	12	13	14
Steel, per gross	$3.50	3.00	2.50	2.15	1.75	1.50	1.25	1.00	.85	.70	.65	.60	.55	.50	.45	.45
Brass "	30.00	25.00	20.00	15.00	12.00	9.00	7.50	6.50	5.50	4.50	3.50	2.75	2.00	1.50	1.25	1.00

Square Screw Hooks.

Nos.	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114
Steel, per gross	$3.50	3.00	2.50	2.15	1.72	1.50	1.25	.85	.70	.65	.60	.55	.50	.45	.45
Brass "	30.00	25.00	20.00	15.00	12.00	9.00	7.50	5.50	4.50	3.50	2.75	2.00	1.50	1.25	1.00

Blunt Screw Hooks.

Nos.	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214
Steel, per gross	$3.50	3.00	2.50	2.15	1.75	1.50	1.25	.85	.70	.65	.60	.55	.50	.45	.45

Cornice Hooks and Eyes.

Inches	2½	3	3½	4	4½	5	6	8	10
Steel, per gross	$2.65	2.80	2.90	3.10	3.25	3.80	4.20	5.25	6.25

Cornice Hooks Without Eyes.

Inches	2½	3	3½	4	4½	5	6	8	10
Steel, per gross	$2.30	2.45	2.55	2.75	2.90	3.45	3.85	4.90	5.90

Gate Hooks and Eyes.

Inches	1½	2	2½	3	3½	4	4½	5	6
Steel, per gross	$1.50	1.70	2.00	2.30	2.60	3.00	3.50	3.80	4.75
Brass, "	5.50	7.50	10.00	12.50	16.00	17.00	21.00	22.50	30.00

Inches	8	10	12	14	16
Steel, per gross	$7.50	10.00	12.50	15.00	20.00

Stair Rod Eyes.

Bright, per gross ..... $0 75 Bronzed, per gross $0.90

All Screw Eyes with Short Shanks (½ numbers) not listed above are five cents list per gross higher than the corresponding regular numbers.

Screw Hook and Strap Hinges.—A further advance has been made in the price of Screw Hook and Strap Hinges, which are now represented by the quotation of 3¼, 3 and 2¾ cents, with the usual concessions to large buyers.

Carriage Bolts, Machine Bolts, &c.—As the result of another conference between the manufacturers of this line of goods prices are still further advanced. The meeting, which was held at Cleveland, was largely attended and thoroughly representative. The manufacturers agreed in reporting an excellent condition of business, with a fair demand, notwithstanding the fact that most of them are occupied on old orders and are obliged to meet the competition of goods purchased at lower prices. An advance of 5 per cent. was made in Common Carriage Bolts and an advance of about 10 per cent. in Machine Bolts, Bolt Ends, &c. The regularly published prices on these goods are as follows, but large buyers can obtain an additional 10 per cent. discount:

	Per cent.
Common Carriage Bolts	70
Machine Bolts	70 and 10
Bolt Ends	70 and 10

Lag and Coach Screws.—Similar action was taken by the manufacturers in regard to Coach Screws, the regularly announced prices being as follows, subject to an extra 10 per cent. in large orders:

	Per cent.
Gimlet Pointed Coach	80
Common " "	80 and 5

Nuts.—The market for Nuts is characterized by a firm tone and at the meeting last week a further advance was made. Nearly all the manufacturers are full of orders, and with the condition of the market in raw material and the probability that it will be still higher prices are firmly maintained. The regularly announced prices are as follows, with a concession of 1-5 cent additional to large buyers:

	Cents off list.
Cold Punched, Square, plain	5.30
" " Hexagon "	5.50
" " C. T. & R., Square	5.30
" " " " Hexagon	6.00
Hot Pressed, Square	5.70
" " Hexagon	6.30

The action of the manufacturers' embodies, it will be seen, an advance of about ½ cent.

Stove, Plow and Tire Bolts.—An advance of about 10 per cent. has also been made in the price of Stove, Plow and Tire Bolts, which are now quoted at discount 70 per cent.

Harrow Teeth.—In view of the increased price of the raw material an advance has been made in the price of Harrow Teeth, which are now quoted in round lots at 2 and 2.10 cents.

Horseshoes.—The situation in Horseshoes remains as at our last report. The manufacturers who were recently in conference are endeavoring to maintain the somewhat higher prices then determined upon, but in view of the fact that a leading manufacturer has made no change in his prices the market is not entirely even. There will be a further conference on April 2 and the outcome will be awaited with interest.

Trace Chains.—The market for Trace Chains is decidedly firm, not only on account of the advances which have been made by the manufacturers, but also from the likelihood that a scarcity may be developed. This is owing not only to the extent of the demand, but to the fact that the manufacturers find it very difficult to obtain the raw material in sufficient quantities. It looks as if the question of obtaining the goods would be more important than the price.

Axles.—The manufacturers of Axles are conferring with reference to the condition of the market in this line, and it is thought not unlikely that an advance will be decided upon.

Wrought Goods.—The market for Wrought Goods is decidedly firm and a further advance has been made. The market is represented by the quotation of 90 to 90 and 10 per cent., according to the character of order, &c.

Fittings, Cast and Malleable.—The tone of the market in this line is decidedly firm and another advance was made last week.

Galvanized Pails.—As a line of goods directly affected by the important advances which have taken place in the raw material, Galvanized Water Pails, Fire Pails, &c., are considerably higher, manufacturers having withdrawn old quotations and substituted new prices.

Silver Plated Ware.—As the result of agreement between the manufacturers and the course of the market in the raw material, Silver Plated Ware, both Flat and Hollow, is held at prices considerably higher than those ruling a short time ago. The Flatware is represented in a general way by the discount of 50 and 10 per cent., to 50 and 10 and 5 per cent., somewhat lower prices being obtainable on good orders.

Augers and Bits.—The manufacturers generally are maintaining the advanced prices recently determined upon, but the market is not entirely even. The prices of the regular goods are interfered with somewhat by the fact that most of the jobbing trade are making concessions in view of their having stocks purchased at lower prices. The competition of the cheaper or second quality goods has also something of a disturbing effect on the market, as a good many merchants are satisfied to buy them, notwithstanding the uncertainty as to the quality.

Wire Brads.—In sympathy with the movement in Wire Nails in kegs the papered goods are firm in price and quotations are somewhat advanced. The market is represented by the discount of about 85 per cent. to good buyers.

Cast Butts.—An advance has been made in the price of Cast Butts, Loose Pin, Loose Joint, Parliament, &c. The manufacturers' discount on these goods is now 75 per cent.

Padlocks.—An advance has been made in the price of Wrought Iron Padlocks, and the market is now represented by the quotation of 75 and 10 per cent. discount.

Screws.—A further advance has been made in the price of Screws, the base discount on Flat Head Iron being now 85 per cent. This action was taken by all the manufacturers and is announced under date March 22. The present discounts on Screws are as follows, with an additional discount of 2 per cent. for cash in ten days:

Iron.

	Discount. Per cent.
Bright, Flat Head	85
" Round and Oval Head	82½
" Fillister Head	82½
Blued, Flat Head, add 5 per cent. to net amount of invoice	85
" Round Head	82½
Felloe, Flat "	85
Drive	85
Japanned, Flat Head	82½
" Round Head	75
Tinned, Flat Head	82½
" Round Head	75
Bronze Plated, Flat Head	82½
" " Round Head	75
Brass Plated, Flat Head	82½
" " Round Head	75
Coppered, Flat Head	80
" Round Head	75
Nickel Plated, Flat Head, Burnished	80
" " Round Head, "	80
Silver Plated, Flat " "	80
" " Round " "	80
" " Flat " not polished	75
" " Round " " "	70

Brass.

Flat Head	80 and 10
Round and Oval Head	75 and 10
Nickel Plated, Flat Head, Burnished	75
" " Round Head, "	75

Bronze Metal.

Flat Head	75 and 10
Round and Oval Head	75

Kilbourne & Jacobs Mfg. Company.—Under date March 22 the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, announce advances, which are rendered necessary by the increased cost of Iron, Steel and other material. The advances are as follows:

Drag Scrapers.

	Each, advance.
All kinds	$0.50

Wheel Scrapers.

Pressed Bowl and Square Box.

Nos.	Each, advance.
1	$1 00
2	2.00
3	3.00

Plows.

Nos.	Each, advance.
5 and 15	$1.00
3 and 13	1.00
106	1.00
105	1 50
101	1.50
103	2.00

It is also intimated that in view of the increased cost of all kinds of material and the very heavy demand a further advance is probable in the near future.

Market and Stone Wire.—Manufacturers of articles into the construction of which Wire enters report a good deal of inconvenience on account of difficulty in obtaining it. The market also is in such condition that it is not easy to get quotations or to cover their prospective requirements with any certainty as to the cost of the goods. The trade also find it difficult to obtain these Wires, and there is some uncertainty as to what are to be considered current prices.

Tacks.—Some of the manufacturers have made minor changes in their quotations, mostly in the way of withdrawing some special concessions. The market thus shows its firmness and its tendency toward higher prices. There is still a good deal of unevenness in current quotations, and the jobbers do not in all cases keep pace with the manufacturers' advances.

Shovels and Spades.—The advance of 75 cents a dozen which was recently made by the associated manufacturers is firmly maintained by them, but there is more or less shading of prices throughout the trade. In regard to the prices of the Oliver Ames & Sons Corporation, to which reference was made in our last issue, there has been some misunderstanding in the trade, many of whom overlooked the fact that the 5 per cent. discount heretofore given to purchasers of $200 worth in six months was withdrawn in the recent discount sheet. The fact that this discount is not now given makes an advance of 5 per cent. on their Ames brand as well as on other goods.

Cordage.—A further advance of ¼ cent per pound was made March 27 by manufacturers in the price of Rope, as follows:

	Per pound, cents.
Manila, 7-16 inch and larger	9½
" ⅜ inch	10
" ¼ and 5-16 inch	10½
Sisal, 7-16 inch and larger	8½
" ⅜ inch	9
" ¼ and 5-16 inch	9½
" Lath Yarn	8

Manila Tarred Rope, 15-thread, is quoted 9½ cents, as is also Manila Hay Rope, medium. The price of Jute Rope is 5½ to 6 cents.

These prices are for carload lots, ¼ cent per pound advance being charged for less quantity. The higher price of Hemp is responsible for the advance in Rope. Though some jobbers are shading these prices there is as a rule a stronger feeling and a nearer adherence to card rates. Demand is fair for actual requirements.

Binder Twine.—The advance in the price of Hemp has also affected Binder Twine, which was advanced ¼ cent on March 27 by manufacturers. The following are the present carload prices, f.o.b. Eastern factories, with an advance of ¼ cent per pound for less quantities:

	Cents.
White Sisal, 500 feet to pound	9⅜
Standard, 500 feet to pound	9⅜
Manila, 600 feet to pound	10⅜
Pure Manila, 650 feet to pound	10⅜

Glass.—A portion of the employees in some of the combine Glass factories have demanded an increase in wages, resulting in a suspension of work and a closing down of the plants. Just how this will affect the independent factories is not known, but in Glass circles it is considered that the trouble precedes an advance in the price of Glass by the combine. From present indications it is assumed that the combine will not be in force later than next fall, and that there will be an open market with the consequent demoralization of prices. The outcome of the struggle for supremacy will be watched with interest. Eastern jobbers are quoting 85 and 5 per cent. discount for less than carload lots. American Glass Company's prices to the regular trade are as follows:

Districts.	A.	B.	C.	D.	E.
5000 boxes or more	85 & 10	85 & 10	.....	.....	85 & 10
Carloads	85	85	85 & 5 & 2½	.....	85
3000 boxes or more	85 & 5	85 & 5	.....	.....	85 & 5 & 2½
1000 boxes or more	.....	.....	85 & 10 & 2½	.....	.....

These prices are subject to freight allowance.

Paints and Colors.—The past week has shown somewhat less activity in the White Lead market and orders are filled more promptly. With better weather the demand will probably increase. Prices remain unchanged, as follows: In lots of less than 500 pounds, 6¼ cents; 500 pounds or over, 5½ to 5¾ cents.

Oils.—*Linseed Oil.*—An advance in the price of Linseed Oil was made by manufacturers March 24 as follows: City Raw in lots of less than five barrels, 48 cents per gallon; five barrels or more, 47 cents. Out of town brands 1 cent less. Calcutta Oil, 58 cents per gallon; Boiled Oil, the usual 2-cent advance per gallon. The advance in the cost of Seed is the cause of the higher price, and some mills have closed down on account of the price and scarcity of Seed. Those well versed in the Seed market would not be surprised to see 50 cent Oil. Large purchasers have about covered their requirements, and the market is also devoid of speculative features. The weather for the past month has not been conducive to the consumption of Oil, resulting in a moderate business. The market is firm at the advance, except in some cases where competition is sharp dealers who have stocks bought at lower prices may shade prices to secure Paint orders.

Spirits Turpentine.—The receipt of the first of the new crop of Turpentine at Savannah rather earlier than anticipated by some resulted in a weak and falling market. From last week's quotation of 48 cents for machine made barrels the price has declined to 45½ cents. Buyers are not free purchasers on a falling market, so it is difficult to forecast the immediate future of Turpentine. Old stocks are light at all points and it is estimated that from 90,000 to 100,000 barrels have been sold for summer delivery, which is supposed to represent about half of the receipts for the summer months. A light crop has been expected because of the lateness of the season, and it is anticipated that the market will recover itself, at least later in the season.

Hardware Organizations.

South Dakota Retail Merchants' Association.

The South Dakota Retail Merchants' Association, who have as a motto "In union there is strength," are moving energetically to secure from their State Legislature the passage of a group of laws designed to benefit them. This association embraces all lines of trade. They have urged each member of the association to communicate with their Senator and Representative, stating what they as an organization want, the data and necessary material for the communication having been worked into condensed form by the executive branch of the association.

Among the bills sought to be enacted into law is one relating to garnishment, which also defines the method of procedure in such cases, being a copy of the Illinois law. Another bill relates to the compounding and adulteration of food products. Another law pertains to the sale of White Lead, and is aimed at adulterated stock sold as pure goods.

Another proposed act provides for licensing transient

retail merchants in cities and towns, so that merchants temporarily disposing of bankrupt, fire and other stocks shall pay something in taxes toward the government, as the regular dealer does.

Still another, copied from New York statutes, relates to the regulation of the sale of merchandise, and to prevent misleading and dishonest representation, particularly aimed at misleading and lying advertisements. The remaining bill which they seek to have passed relates to exemptions of homesteads and personal property. This is a move to benefit the creditor instead of the debtor. It proposes to reduce the value of a homestead from $5000 to $1500, and personal property exemptions one-half. The effect of this law would be to leave the debtor with less property exempt in case of a levy for debt.

Missouri Retail Hardware Association.

A cordial invitation has been extended to every Hardware merchant in the State to be present at the meeting at St. Louis on April 11 and 12, when the organization of a retailers' association will be perfected. The sessions will be held at the Lindell Hotel. E. Thomas of Trenton, Mo., who is secretary of the Committee of Arrangements in charge of the meeting, will be pleased to answer any inquiries touching the gathering which may be sent him. Mr. Thomas hopes that merchants who are intending to be present will notify him promptly so that arrangements can be made for their proper accommodation. A special railroad rate on the certificate plan has been secured, so that the round trip from any point in the State to St. Louis and back can be made at the rate of one fare and a fifth. This important concession has been secured through the Interstate Merchants' Association. The certificate plan is described by Mr. Thomas as follows:

When you buy your ticket purchase it at full fare one way only to St. Louis, and secure from the ticket agent at your station a certificate to the effect that you have purchased such ticket. Do not buy a round trip ticket. This certificate must be signed by you in the presence of your ticket agent. Insist on ticket agent giving you a certificate showing amount you paid for ticket.

When you arrive in St. Louis leave the certificate at the office of the Interstate Merchants' Association, 704 Washington avenue. Do this the day you arrive in St. Louis, to enable you to receive the advantages of the reduced rates to return.

Failure to procure or present a certificate from your station agent invalidates any claim for reduction in return fare. Be sure to get a certificate and be sure and leave it at the office of this association on the day you arrive in St. Louis.

As we have already announced, a number of interesting papers will be read and addresses made at the meeting by well-known and enterprising Hardwaremen, and a large attendance is hoped for, so that the association may make a good start. It would certainly seem to be to the personal interest of every Hardware merchant in the State to identify himself with an organization of this sort, and if not present at the meeting to at least apply for membership in it. The success of Hardware associations in Minnesota, Ohio, Iowa and other States has amply demonstrated their usefulness in mitigating if not entirely correcting the many abuses which have crept into the trade.

Minnesota Retail Hardware Association and Mutual Fire Insurance.

A bill has been introduced in the Minnesota Legislature authorizing the organization of mutual retail Hardware fire insurance companies. With the probable passage of this bill the way will be clear for the Minnesota Association to form a mutual fire insurance company for the benefit of its members, thus adding greatly to its value and usefulness.

Southern Hardware Jobbers' Association.

It has been decided to hold the ninth annual convention of the Southern Hardware Jobbers' Association at Atlantic City, N. J., on June 14, 15 and 16 next.

Hardware Club of New York.

The annual meeting of the Board of Governors for the election of officers was held on Thursday evening, March 23, when the following gentlemen were elected to fill the offices mentioned:

GEORGE H. SARGENT., President.
EDWARD C. VAN GLAHN, Vice-President.
THOMAS F. KEATING, Treasurer.
JAMES H. KENNEDY, Secretary.

After disposing of the business of the evening the new president escorted the retiring executive, Mr. McCartee, into one of the dining rooms, followed by the remaining members of the board. Here Mr. McCartee beheld a beautifully decorated table, and then to his complete astonishment the governors proceeded to entertain him at dinner as a testimonial of their great appreciation of his worth. A programme prepared for the occasion, arranged by Alfred D. Clinch, who was in charge of the arrangements, was at each place and contained the following inscription: "Complimentary dinner to Peter McCartee, president of the Hardware Club of New York, 1895-1899, by the Board of Governors." Inside was a portrait of Mr. McCartee and upon the following page the acrostic here given:

Principle is ever his motto, not expediency.
Everything handsome about him.
Touched nothing that he did not adorn.
Elegant but not ostentatious.
Reputation is more valuable than money.

Much may be made of a Scotchman if he be caught young.
Circumstances are the creatures of men.
An honest man's word is as good as his bond.
Rather be right than be President.
Then he will talk! How he will talk!
Every inch a king.
Everything comes if a man will only wait.

At the proper time Mr. Clinch for the governors presented to Mr. McCartee a handsome sterling silver bowl and ladle bearing this inscription: "Presented to Peter McCartee, President of the Hardware Club of New York 1895-1899, by the Board of Governors, March 23, 1899."

The warm regard in which Mr. McCartee is held by the club and their appreciation of the marked success of his administration are given formal expression in the following resolutions adopted at the annual meeting:

Whereas, Peter McCartee, having declined to accept a renomination on the Board of Governors of the Hardware Club, leaves the presidency after having served more than three years as the chief executive of this club in a most able, capable and efficient manner; be it, therefore,

Resolved, That the members of the Hardware Club, convened at its annual meeting, express to Peter McCartee, its retiring president, their full and complete appreciation of the very able and efficient services performed by him during his term of office, also for his ever courteous and genial manner alike to members and their guests, and for his untiring energy in placing this club in the front rank of down town clubs in Greater New York; and, further,

Resolved, That these expressions, upon a unanimous vote, be spread upon the minute book of the club in recognition of his labors in furtherance of the interests of the club.

Correspondence.

14 WARREN STREET, NEW YORK,
March 24, 1899.

To the Editor: In your report of the dinner of the New England Iron & Hardware Association, in your last issue, my impromptu remarks were condensed very skillfully by your reporter, but in some way I am made to say that "the present remarkable industrial conditions would not last long." To say this, after all the depression of the previous five years, seems like a case of hopeless pessimism. No! I think our present prosperity will last some time. The wonderful balance of trade in our favor, with the cheapness of money, makes it possible for every city, town and county throughout this broad land to make long needed improvements, and enables many legitimate enterprises to be carried out, employing labor extensively and using material of all

kinds. There can hardly help being an era of great prosperity while this condition lasts and general confidence continues.

The point I wished to make was that the productive capacity of our people is so great, with their money, inventive genius, fine workers and intense energy, that the tendency is, under a powerful incentive, as at present, to overproduce in time. How soon this may come is a question as matters now are, but it is likely to come sooner or later. In view of this my opinion is that the export of our products is still the great safeguard against a glutted market and all that it means.

The very wonderful strides of the United States recently in material prosperity and consciousness of its own power gives a new and intense stimulus to efforts for increasing our export trade and securing all the advantages to which our position as a nation is entitled. Everything is favorable to us, and now is the time to carry our commerce throughout the world in the American fashion, a way which is peculiar to ourselves, and which in other matters recently has excited some astonishment abroad. C. S. VAN WAGONER.

The Question as to Advancing Prices.

To the Editor: We have been struggling with an overabundance of orders from our jobbing trade, and while we do not see how we can possibly make a profit or continue to furnish our lines at the present prices without an actual loss, we have not, and shall not, advance prices upon our general lines until we have more thoroughly tested existing conditions, for several reasons, some of which are: We have been many years in establishing our goods in the hands of our present States jobbing and export customers, and an advance in price will certainly disturb their distribution of the goods, and probably, in some instances at least, induce them to find other sources of supply, so encouraging competition against our now established lines. Second, there is a considerable belief among the trade that the advance of metals is caused by combine and trust interests, and many are emphatic in their expression of the belief prices will soon recede nearly if not quite to the low prices of a few months ago, which is not in accord with our views, but should it occur the situation of the manufacturer who had advanced his prices would be most disastrous.

Although this is our busy season, we believe the excessive number of orders we are now booking is somewhat from the fact we have not advanced prices, though we do not sympathize with the view as expressed by some large manufacturers, that jobbing dealers are stocking up for future trade. Our experience is, where our customers have ordered in lines larger than last year, they have already taken what was intended for April shipments, and are sending us lists of goods they are entirely out of, asking us to hurry forward, which would not be the case were they carrying stocks. We believe our customers have less goods of our manufacture in stock than at any previous time in our manufacturing history, all of which tends to confirm our determination to continue old prices rather than disturb the business relations with trade we have been so many years in establishing, particularly in export markets.

NEW ENGLAND.

American Hardware in Germany.

DRESDEN, GERMANY, February 27, 1899.

To the Editor: From my personal observation I should judge that there is a large market here for American Hardware, especially in heating and sanitary lines, plumbing apparatus and appliances, &c., as things seem to be backward here. Further, there appears to be a good opening for small and shelf ware, as well as Tools. As business is good here at present and people are prosperous on account of advancing wages, the opportunity for the introduction of American goods seems to be better than at any other time. Importers in other lines have certainly no reason to regret it, as American wares are *selling* here at prices considerably above those at home.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Yard Marking of Oil Cloths.

A good deal of attention is being given by manufacturers to the matter of putting up goods so as to serve the convenience of the retail trade. In this connection the following suggestion from an enterprising house in New York in regard to the marking of Oil Cloths will be of interest:

Would not manufacturers of Oil Cloths and Linoleums confer a favor upon all retailers by yard marking all products on the edge, thus saving the necessity of unrolling yards to find their contents? Inventory has just suggested this matter.

A Commendation of the Spalding Policy.

This letter is from a well-known Ohio merchant, and refers in terms of approval to the Spalding policy:

The radical change proposed by Spalding Bros., as announced by the sending of a small pamphlet by the retail trade throughout the country, is undoubtedly a move in the right direction. The retail trade will now have a chance to handle the goods with a degree of profit.

Then in this new method the consumer comes in contact with the retailer, the person to whom he naturally should look for his supplies, for a personal inspection of goods is by far the better way to buy goods. A catalogue description of goods is not always satisfactory. There are oftentimes flights of fancy in the description of goods by catalogue, and the consumer learns "that words are sometimes used to conceal thoughts."

This is probably not the time or place to enter into a discussion of the reasons why the consumer should buy of the retailer rather than from the catalogue house or the so-called "jobber." We are glad that the radical change is to be tried, and we await the outcome with a good deal of interest.

The Relations Between the Jobbing and Retail Trade.

In the following letter our correspondents discuss the above question, and allude to the fact that in some cases the jobbers go to the consumers and thus interfere seriously with the business of the retail merchants:

An article published in *The Iron Age* on February 2, concerning the movement on foot among the jobbers in Canada to prevent manufacturers selling to the retailers, undoubtedly concerns the jobber in the United States fully as much, but there is another side to the matter in which the retailer finds equally as much room for complaint, with reference to the methods now in vogue among many of the jobbers. The retailer could take revenge by refusing to purchase from the jobber who sends a representative to call first upon the trade and immediately thereafter upon the consumer, to whom he names even a lower price than that given the retailer. In a certain city, noted especially for its product of Boilers and Engines, it is utterly impossible for the retailer to meet the ridiculously low prices made by some of these poor downtrodden (?) jobbers, who resort to the in-

famous method of calling upon the consumer and stealing trade in this unprincipled manner. Shall the retailer lie down like a spaniel and lick the hand that beats him?

The jobber, almost without exception, has no one to blame but himself for his loss of business among retailers. The moment a retailer quotes a price to the consumer, and is informed that he is in receipt of a quotation from Blank & Blank, jobbers, as low or lower than he himself is paying, he immediately turns to the manufacturer for a price that will put him in position to meet this decidedly unjust competition, and after making a satisfactory explanation the manufacturer decides to place him on the ground floor, if a certain amount of goods can be disposed of.

Then the retailer calls upon the trade which rightfully belongs to him, and agrees to meet the price; while under the system of the jobber he would be literally robbed.

The wholesaler is entitled to nothing less than total elimination for his gross violation of good business principles. There is, however, still hope for him if he comes to a realization of the situation and decides to play fair with the retailer.

An American Manufacturer's View of Chinese Trade.

THE information concerning China here given, as about Japan in our issue of January 19, reflects some of the existing conditions in that widening market and densely populated part of the world, as they appeared to a representative of the largest company in its line in the United States and probably on the globe.

The opening up of China is yet a matter of the future. One cannot go there and start in business as in other countries. The Chinese have the same old established system of doing business as in Japan.

Great Importing Houses in Treaty Ports.

The great importing houses are in the principal ports, among which are Shanghai, Tientsin, Foo-Chow, Newchwang and Hong Kong, there being no other open ports of much importance. Hong Kong is an entirely free port. Other treaty ports have a low scale of duties which do not greatly interfere with commerce. In the treaty ports English, Continental and American firms have been established for many years. The palmy days of trade when 100 per cent. profit was normal have passed.

The Compradore.

The central pivot on which Chinese business rests is the "Compradore," signifying buyer. All business is done through him. He is the head of the staff of Chinese salesmen and takes matters in his own hands. He sells goods, collects money and also a commission, which is not infrequently larger than his principal imagines. The Compradore is a go-between and always a Chinaman. There is a society of Compradores, which is one of the wealthiest societies in China.

The Chinese in the interior do not take much of a variety of American products as yet, although in the aggregate the business is large.

Inland and Coastwise Transportation.

The country has excellent facilities for water transportation by means of rivers, canals, &c., there being lines of steamboats on the rivers and up and down the coast.

Russia's Increasing Influence.

Russia has practically annexed a large portion of Manchuria, and is fast Russianizing the country. So long as they do not put a discriminating tariff on goods this occupation is greatly to the advantage of American manufacturers and will increase the demand for American goods.

The English Opening New Treaty Ports.

The opening of new treaty ports now being done by England deserves the heartiest co-operation of Americans. By treaty ports is understood places where the Chinese Government has granted to foreign governments the privilege of trading with the natives and engaging in all kinds of commerce, at the same time giving them definite concessions (for ownership of land, &c.), to be used for building and other purposes and all kinds of municipal administration.

Some Characteristics of Shanghai.

Shanghai is the largest of the ports mentioned, and a most imposing city. Discrimination should be made between the actual demands of natives in the interior and the very considerable quantity of goods sent out for the use of people (largely foreigners) in the treaty ports.

In Shanghai, for instance, there are a number of cotton mills of sufficient capacity to manufacture the bulk of the coarser grades of cotton cloth required in China. There are also large machine shops and shipyards for building river steamers and for general repairs. In the mills, shipyards, &c., English machinery is almost universally used.

Fewer Opportunities in the French Sphere of Influence.

In Indo-China very considerable provinces are under French control, and while a certain volume of American goods is sent there the whole tendency is in favor of discriminating duties, and no large increase of trade can be hoped for in this direction.

Chinese Commercial Character.

The commercial character of the Chinese is in marked contrast to that of the typical Japanese. In Japan no native employee is allowed to handle money as a cashier, Chinamen being employed to fill these positions. According to Chinese custom, which is stronger than law, there being no laws except the laws of villages, the family of any Chinaman holds itself responsible for his good behavior in any position of trust. Various instances can be pointed out where the defalcations of an absconding cashier have been made good by families who have also exerted themselves to catch the culprit and see that justice was administered. The Chinaman is a keen, shrewd man of business, and when his word is once given it can be relied on to a greater extent than that of any other nationality in the East.

C. W. Hackett Hardware Company's Catalogue.

C. W. HACKETT HARDWARE COMPANY, St. Paul, Minn., have issued a large catalogue of 1156 pages, illustrating and describing the lines handled by them. It is the third large edition issued by the company. A picture is given in the front of the book of their establishment on East Fourth street, followed by an alphabetically arranged index of 19 pages. The goods are arranged in departments shown by a department index as follows:

	Pages.
Mechanics' and Edge Tools	1 to 170
Locks, Latches and Builders' Hardware	171 to 452
Farming Tools, Lumbering Tools, &c.	453 to 708
Pocket and Table Cutlery, Razors, &c.	709 to 782
Silver Plated Goods, Clocks, &c.	783 to 816
Sewing Machines, Safes, Wagons, Bicycles, &c	817 to 840
Enameled and Tin Ware, Paints, &c.	841 to 892
Tinners' Trimmings, Tools, &c.	893 to 932
Guns, Ammunition, Sporting Goods, &c.	933 to 1100
Fishing Tackle, Boats, &c.	1101 to 1156

From the foregoing it will be seen that the range of goods is large, covering an extensive variety and including many not shown by the company in former catalogues, which have been recently added to their stock. The book is well printed on a fine quality of paper, is copiously illustrated and substantially bound in leather and cloth The book no doubt will be highly appreciated by the company's customers.

George H. Sargent.

GEORGE H. SARGENT, the subject of this sketch, was unanimously elected president of the Hardware Club of New York at a meeting of the Governors held on Thursday, March 23, succeeding Peter McCartee, who had declined a re-election. Mr. Sargent was the vice-president of the club, having been chosen a governor to fill the vacancy caused by the death of William H. Williams in 1895.

Mr. Sargent has long occupied a conspicuous position in the trade, both on account of the prominence of his firm and his personal character and ability. He has always been identified with the New York house, his brother, Hon. Joseph B. Sargent, supervising the manufacture of Hardware at their extensive works in New Haven, Conn., of which city he was formerly Mayor.

George Henry Sargent comes of sturdy Puritan stock and was born in Leicester, Mass., October 29, 1828. His ancestors were among the founders of the town early in the eighteenth century, the descendants of his progenitors being referred to in the history of Leicester as "most active and zealous of those who were in opposition to the British Parliament, were very public spirited and highly honored citizens and prominent in Massachusetts as American patriots, sharing the glory and fame as brave comrades of the heroes of '76." William Sargent was the forefather of the American branch of the family. He came from Northampton, England, to Charlestown, Mass., in 1638, and became a "freeman" and one of the important men in the colony. He was a "lay preacher," and as Johnson says in his annals of New England, "a Godly Christian." The mingled blood of Pilgrim and Puritan flows in the veins of his descendants.

After a course at Leicester Academy the subject of this sketch entered Harvard College. Among the members of his class, that of '53, were Charles W. Eliot, now president of the university; Professors Peirce, White and Hill, all connected with the university; Edward King, president of the Union Trust Company, New York; Justin Winsor, formerly librarian of Harvard, and many others who have been prominent in business and professional life.

On leaving college in 1853 Mr. Sargent came to New York and entered the Hardware trade, occupying modest quarters in the third loft at 24 Cliff street, moving thence to 85 Beekman street the following year, where in 1856 the present efficient heads of departments, Thomas J. Atkins and William J. Ladd, and in 1860 George Munson, entered the employ of the house. In 1863 they moved to 70 Beekman street, where they remained until 1875, when they entered upon larger quarters at 37 Chambers street. In 1879 the adjoining building, No. 35, was leased and in 1890 No. 33 was added. Condemnation proceedings by the city of their buildings, with many others, to secure a suitable site for the new Hall of Records, caused them to move a few blocks further uptown to a fine and comparatively new building, 149-153 Leonard street, near Centre, where they are now located.

The immense works at New Haven, Conn., were established in 1863, moving there from New Britain, Conn., where for some time goods were manufactured in the building formerly used by Peck & Walter Company, of which company Sargent & Co. were an outgrowth, the removal being necessary in order to get more room than was available in New Britain, and thus this notable manufacturing city lost a house which has since taken its place as one of the largest manufacturing concerns in the country and in the world.

For a long time the two brothers, with Edward Sargent, another brother, manufactured hand cards for carding cotton and wool at their factory in Leicester, a business inherited from their father. In this industry a great deal of money was made during the Civil War, which led to the observation that it was like borrowing money that need not be returned.

Mr. Sargent is endowed by nature with a robust physique and an impressive and dignified bearing, rendering him a conspicuous figure in any assembly. He has a vigorous intellect which has been developed by education, earnest application to business and association with men of culture and of affairs. His opinions on questions relating to commercial matters are regarded as especially sound, resulting from his foresight, balanced and discriminating judgment, and the broad and comprehensive views taken of the subject under consideration. With exceptional financial ability and fidelity to any responsibilities assumed, he has an enviable reputation for sterling honesty and integrity. The fact that he is a good judge of character is also referred to as one of the characteristics which have contributed not a little to the pronounced success of his business career.

While in recent years he has ceased to give as much attention as formerly to details, he is attentive to busi-

ness, keeping an observant eye on what is going on in the store, is very democratic in manner and can be approached without formality. He has a bluff, breezy way but withal a kind, genial manner that wins respect and makes friends.

For years Mr. Sargent has been almost invariably at the office on business days and holidays. It is narrated of him that once seeking to rid himself of an advertising man he finally promised an advertisement on a certain morning, knowing it to be a holiday; but his tormentor took him at his word, was promptly on hand, and contract was given as agreed.

Mr. Sargent used to make it a rule to scrutinize carefully the regular monthly statements before they were sent out, and as occasion required he would often supplement them with a terse, pungent foot note, or if necessary a letter suggesting that the account was somewhat ancient and should be settled. The tact, originality, wit and wisdom of his correspondence in connection with this department of the business are well known and might be illustrated by many examples. Once looking over an unusually long statement, somewhat overdue, he wrote below, "Billy, come down," and not in vain. A letter addressed to an excellent firm in a neighboring city excited the ire of the recipient, who contemplated a reply in the same vein, but was dissuaded by one of his partners, who dryly remarked, "Don't answer it; if you do you will get another." Mr. Sargent certainly has the faculty of uttering trite and striking sayings in a genial, jocose way, that, read between the lines, usually accomplish what is desired.

Mr. Sargent, while frugal in personal affairs, has the reputation of being broad and generous in business matters, notwithstanding his remark once made in his office, "It takes a brute to sit right here and keep expenses down." He once handed an expense account back to a traveling man with the injunction to revise it. The salesman replied that the only revision possible would be to charge it to his personal account, whereupon he signed it at once. In view of his personal characteristics he is referred to by some who have known him long and well as one of the most popular of the prominent Hardware merchants of the country.

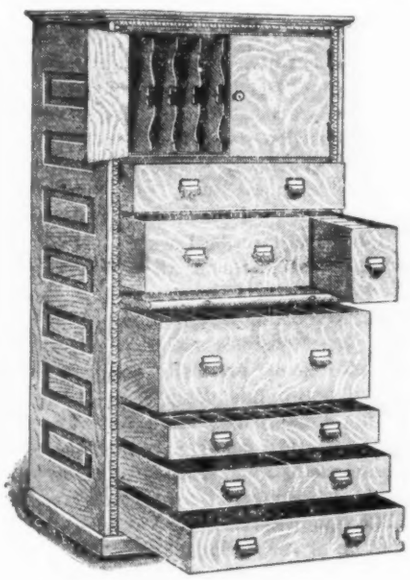
Instances of his liberality and kindness are not far to seek. A gentleman about his own age who had long dealt with him became involved in serious financial difficulties during the depression following 1893, and found in Mr. Sargent a warm friend. Speaking of it recently he said that he could not have received better treatment if Mr. Sargent had been his brother or father, being given more consideration than he would have asked or expected.

Besides being a member of the Hardware Club he has long belonged to the Union League Club and the University Club, is a director of the Mercantile National Bank, and in January last was elected a member of the Chamber of Commerce, indicating the prominent place he occupies among the business men of the city. As a representative Hardware merchant and in view of his position and character, there is evident propriety in his selection as president of the Hardware Club.

The Leonard Catalogue Cabinet.

A CONVENIENT method of storing and classifying catalogues, circulars, postal cards, &c., which every wide awake and enterprising concern are supposed to preserve for ready reference, is accomplished by means of the Leonard Catalogue Cabinet, illustrated in the accompanying engraving. This Cabinet, which is being introduced by the Leonard Mfg. Company of Grand Rapids, Mich., is made of solid oak, with quarter sawed front, highly polished. It is 32 inches wide, 24 inches deep and 63 inches high, outside measurements, mounted on strong ball bearing centers. The upper cupboard is divided into nine compartments, each 3 inches wide by 13½ inches high, extending back the entire depth of the case. The upper drawer is divided into 18 compartments, each 9¾ inches long by 4½ inches deep. These compartments are intended for odd sized catalogues ranging between the envelope and the standard 6 x 9 size. The second drawer contains 12 compartments, each 9¾ inches long by 7½ inches deep, these being intended for standard 6 x 9 books. The smaller drawer shown at the right in the engraving is intended for the card indexes. Just below these two drawers is a sliding shelf which can be used as a work table. The large drawer below the shelf contains nine compartments, each 19½ inches long by 9½ inches deep, these being intended for catalogues of about 9 x 12 inches standing on edge, and also for standard 6 x 9 catalogues standing on end. The next drawer below contains 27 compartments, each 6½ inches long by 3½ inches deep, these being intended for small size envelope catalogues, circulars folded to fit the spaces, postal cards, &c. The drawer next to the bottom one contains two compartments, each 19½ inches long by 13 inches wide, which are intended for catalogues lying flat. The bottom drawer has no compartment, it being intended for the very largest catalogues lying flat. Each bin is numbered, and the numbers on the drawer pulls include the numbers on the bins.

In the system of classification employed the books, catalogues and circulars are placed in the cabinet according to size. When this has been done each book or package is taken out and marked with the number of the bin in which it is placed. As each book or package is marked, the firm name, address and number on the book are written on an index card, the card being placed in



The Leonard Catalogue Cabinet.

the index drawer, and this method continued until the contents of all the compartments have been indexed. Several names may be written on each card, provided they come within the alphabetical classification of the index. When this work has been done it will be easy to find any catalogue desired, provided the name of the firm making the article is recalled. If this is not the case it can be found by means of the cross index. This is a second card index arranged just behind the first, the cards being headed with the name of the article. The name and address of every firm making the particular article, so far as known, are written on this card, also the number of the bin in which each catalogue is kept. This cross index will be found valuable when it is desired to send out inquiries for new prices on any article, and it will also give at a glance the addresses of all makers so far as known of that particular article.

Combined with the Leonard Cabinet is the Leonard system for buyers, by means of which cost price cards furnish a complete system for buying goods at lowest prices. They are made the size of a large memorandum book, say 5½ x 7 inches, in order that they may be readily slipped in the pocket. The first column of the cost card should have the general name of the article written at the top, while on the body of the card are written the different kinds, these being classified according to individual ideas Other columns carry the addresses of concerns making the articles, date of quotation, time allowed, cash discount and freight allowance. It is not intended to put list prices on the cards, but the net price at which the goods are offered. If desired, the last column can be taken for a retail price, and the next to the last for a wholesale price. The company claim that the great advantage of this card system is that it permits an accurate comparison of prices.

Russell & Erwin Mfg. Co.'s Catalogue.

RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn., and 45 Chambers street, New York, announce the publication of their new complete catalogue for 1899, Volume 9. This forms a book of over 1000 pages, bound in dark red cloth with olive edges and artistically stamped in gold.

The general arrangement of the catalogue does not depart widely from that with which this company's customers have long been familiar, being practically the same as that followed in their last catalogue. In fullness and conciseness of description, however, it is far in advance of that publication; and is perhaps unequaled in this respect by any Builders' Hardware catalogue now in the hands of the trade. Information is given in tabular form whenever possible, and covers even such points as the size of lock fronts and distance from center of hubs to keyholes, dimensions not ordinarily given. Case quantities and weights are specified upon all such goods as are sold in large quantities.

In that portion of the book covering Locks, the Russwin Pin Tumbler Lock is for the first time fully presented, and upon pages 40 and 41 the construction and possibilities of both types of Cylinder Locks made by Russell & Erwin Mfg. Company are briefly and clearly set forth. Master Keyed Locks are given a section by themselves (pp. 62 to 69), prefaced by a page of reference to such other Locks as are classified under various types, but which may be fitted with master-keys if it be so desired. Upon the pages where these Locks are illustrated their possibilities as Master Keyed Locks are given in foot notes.

Pages 120 to 155 describe Lock Sets, from rim sets to front door and vestibule sets, all designated by number with the exception of sliding door sets. Sets with design goods are shown in the next section of the book, which covers the cheaper designs, such as dealers are likely to carry in stock. These are fully illustrated with wood cuts, and the entire line comprised in one design described upon a single page. Here, as in the Fine Goods Supplement mentioned below, a radical change has been made in the mode of numbering, tending to simplify the whole system of numbers. Like goods are now designated by like numbers, and these numbers made specific by the addition of the design name. This is no new device, but is now for the first time employed by this company and is a great improvement over the bewildering multiplication of numbers which grew out of the gradual increase of their design goods. A comparative list of old and new numbers is issued for use until the trade has become familiar with the new system.

In the Butt section of the catalogue case quantities are given upon all those sizes of the cheaper goods which are bought in quantity, and upon the finer Bronze Butts the weight per pair is specified. The pages devoted to Store Door Handles cover the entire line of these goods, even including those which are identified with design goods of the very highest quality and cost. To mark the distinction between these and stock patterns they have been illustrated with gelatine prints of exquisite workmanship, made directly from the goods themselves. Here, again, the same revision of the numbering system has been made that was referred to as affecting design goods.

The miscellaneous goods which follow Store Door Handles are arranged much as in previous catalogues, allowing for the many omissions and additions which have been made since the last catalogue was issued. Finish No. 3 (black background, light polished bronze relief) has been made standard for ornamental bronze and bronze plated goods; finish No. 11 (polished bronze, natural color) for plain goods. Wherever there is chance for misunderstanding, statement is made that the goods are either cast or wrought metal as the fact may be.

In Padlocks are shown the extended line of standard types which this firm have long manufactured and, in addition, the wrought metal Padlocks which have more recently been put upon the market. Hinge Pins and Kuhn's Stove Door Pins, goods which have been made for some years, but not hitherto illustrated, are shown in the Screw section, which has been compiled with the twin purpose of fully illustrating the goods and giving price-lists, which are boldly and distinctly printed. A page at the head of this section shows a large number of special Screws for which there is more or less constant demand.

That portion of the catalogue beginning with page 517 is devoted to the large line of jobbing goods dealt in by Russell & Erwin Mfg. Company, for some of which, like Swan's Mechanics' Tools, they have the exclusive agency.

An exhaustive general index and a numerical index of all the goods of the company's own manufacture complete a catalogue notable for clearness and comprehensiveness, and which, in its printing and binding, shows great care and skill.

As an appendix to the catalogue there is issued a Fine Goods Supplement, which, although complete in itself, may be bound up with the catalogue proper. In this are illustrated, by means of gelatine prints exclusively, the many designs of fine bronze Hardware which this firm have developed in the last few years, as well as their Glass Knobs. The more recent designs especially show a strict adherence to architectural forms and motives which brings them into perfect harmony with the style of the buildings for which they are intended. The gelatine process reproduces the goods with all the fidelity of a photograph and the delicacy of a wash drawing. Every left hand page illustrates a number of articles of a single design; and upon the opposite page are described all the pieces made in that design. Each design is made the subject of a short treatise, giving the features of the school to which it belongs, the relation of that school to others which succeeded it, and, in some cases, the motive which inspired the design. There is just enough of a connection between these treatises to make them a short history of art, exemplified in Hardware, and to carry the interest forward from one page to the next. This is an altogether novel feature in a work of this kind.

Reference is made at the base of each page to the finishes in which the goods will be furnished, and suggestions made as to finishes which are most appropriate for the various designs.

The Fine Goods Supplement is one of the most artistic works yet issued to the Hardware trade; combined with Catalogue Volume 9, it gives all the goods dealt in by Russell & Erwin Mfg. Company in remarkably compact and convenient form, considering the number and variety of these goods.

Catalogues may be obtained through any of Russell & Erwin Mfg. Company's warehouses in New York, Philadelphia, Baltimore and London, from their factories in New Britain or Dayton, Ohio, or from their sample offices in Chicago or Boston, the last but recently opened at 814 State street, Exchange Building.

A Tin Cycler.

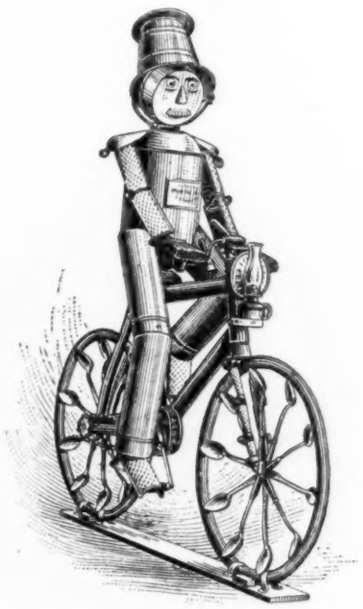
THAT an attractive window display will pay a better profit on the time and money expended in producing it than anything of a similar cost to which a merchant can turn his attention has been the experience of William Dunsmore, Oxford, Nova Scotia, who has sent us a photograph of an attraction which he placed in his window a short time since and which we reproduce in the illustration herewith.

It consists of a tin cycler which was put together by Mr. Dunmore's son Archie, and is made up of different articles carried in stock.

The frame of the Bicycle was made of Conductor Tubing, Buck Saw Frame, Barn Door Hinges and Nutmeg Graters. The hook of the Hinge served as a step.

The wheels were made of Lead Pipe with Basting Spoons for spokes; the sprockets of Star Patty Pans and small Pie Plates with Basting Spoons for cranks and pedals. A Trace was used for a chain and a Tape Measure serves for a cyclometer. The head of the frame holds a Monkey Wrench grasping a Brace for a handle bar. A Shot Pouch is used for a tool bag, a Team Bell hangs on the handle bar for an alarm, and a small Reflector Lamp is used for a light.

The body of the cycler is a 5-gallon Oil Can having legs of Hot Air Pipe and arms made of Potato Graters; Tin Scoops form the shoulders and Whitewash Brushes form the hands. The feet are made of Potato Graters, with Funnels for heels. The head is a deep Pudding Pan, with Pan Feet for eyes, a Coffee Pot Spout for



A Tin Cycler.

nose and half an oblong Patty Pan for a mouth. The Dog Collar at the throat and the large Chamber Pail for a high hat give the finishing touches to the gentleman.

Enameled Ware Litigation.

IN the suit brought by Lalance & Grosjean Mfg. Company, New York, and St. Louis Stamping Company, St. Louis, Mo., against the Haberman Mfg. Company and Matthai, Ingram & Co., Judge Lacombe of the United States Circuit Court has decided that the court does not lose jurisdiction by reason of subsequent events, and will hold the causes until final disposition upon accounting for damages and profits. He also holds that the execution of assignment and release by one of the joint owners (St. Louis Stamping Company) does not destroy the co-owners' (Lalance & Grosjean Mfg. Company) right to recover damages from the defendants. The matter of making the St. Louis Stamping Company defendants with the Haberman Mfg. Company and Matthai, Ingram & Co., is for the present held in abeyance, but the Court says should they (St. Louis Stamping Company) undertake to delay, harass or impede the orderly progress of the cause the motion can be renewed.

The former solicitors for the complainant, who withdrew as attorneys for Lalance & Grosjean Mfg. Company and accepted a retainer from the St. Louis Stamping Company, have surrendered and filed all the papers, exhibits, &c., relating to these causes with the court clerk, who for the prosecution of the suits will transfer them for the time being to the custody of Lalance & Grosjean Mfg. Company's attorneys.

Requests for Catalogues, Quotations, &c.

A. F. WIXSON, who has covered the Lake Superior territory for Fletcher Hardware Company, Detroit, Mich., has purchased the stock of Burgan Hardware Company, Laurium, Mich. Mr. Wixson takes possession about April 1 and solicits catalogues from manufacturers and jobbers of general Hardware. The new firm will be known as the Laurium Hardware Company.

Frank B. Hoole is opening a Hardware store in East Aurora, Erie County, N. Y., and is desirous of receiving manufacturers' and jobbers' latest catalogues and price-lists.

E. T. Martin Hardware Company will open up a general Hardware store at St. Mary's, W. Va., about April 15 and desire catalogues and prices on Hardware, Tinware, Sporting Goods, Stoves, Farm Implements such as Wagons, Plows, Harvesting Machinery, &c.

Price-Lists, Circulars, &c.

THE CLYDE CUTLERY COMPANY, successors to the Hunter Tool Company, Clyde, Ohio: Cutlery and Hardware Specialties.

THE STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee, Wis.: Catalogue of Door Hangers, Wire Workers' Goods, Hot Air Registers, Furnace Goods, Grindstone Hangers, &c. Also catalogue of Railroad Door Hangers, Barn and House Door Hangers, Rail, &c. The company also issue special catalogues, six in number, devoted to particular lines, such as Registers, Wire Workers' Goods, Malleable Hardware, Hangers, &c.

BLAIR HUSKING GLOVE COMPANY, Bucyrus, Ohio: Husking Gloves, Pins and Mittens.

THE HENDEE WIRE BRUSH COMPANY, Milwaukee, Wis.: Catalogue and price-list of Wire Brushes and Wire Brooms, Badger brand Belt Filling and Hardware Specialties.

W. C. HELLER & Co., Montclair, N. J.: Steel Hardware Shelf Boxes, Screw Cases, Mail Boxes, Riding Harrow, Ripping Plow, &c.

EDW. K. TRYON, JR., & Co., Philadelphia, Pa.: Eighty-eight page catalogue showing a large line of Fishing Tackle.

THE MARKHAM AIR RIFLE COMPANY, Plymouth, Mich., issue for the use of the retail trade a neat booklet devoted to their Air Guns.

PERCY G. JAMES, who for some years has occupied a responsible position in the house of Hartley & Graham, New York, has bought the business of Martin S. Rapelye, Jamaica, L. I., and expects to take possession April 4. This is an old established stand on Fulton street, one block east of the town hall, and was bought 12 years ago by Mr. Rapelye from his grandfather. The stock consists of Hardware, Paints, Oil, Glass, &c. It was Mr. Rapelye's invariable custom to take advantage of all cash discounts in making purchases, and Mr. James will continue the same custom.

J. E. Reynolds & Co. and Reynolds Bros., Manson, Iowa, have consolidated their interests under the former style. They are occupying a new store, 25 x 100 feet, two stories and basement. The establishment is equipped with the Warren fixtures. They also have an Implement house, 45 x 100 feet.

S. W. Woodbury, dealer in Hardware, Iron and Steel, Mill Supplies, Farm Implements, &c., Northampton, Mass., has leased a store in the new Masonic Block, two doors below his present establishment. The new store is being stocked with fresh goods and up to date fixtures.

The Pacific Hardware Company have succeeded Castle & Cooke, at Honolulu, H. I., in the wholesale and retail Hardware, Implement and Sporting Goods business.

J. C. Richards is successor to Richards & Williams, at Farmer City, Ill.

F. M. Crow is now conducting the Hardware and Implement business formerly carried on under the style of C. P. Crow & Co., Lane, Kan.

Trade Items.

THE GOODELL-PRATT COMPANY is now the name of the firm formerly known as Goodell Brothers Company, Greenfield, Mass., well known as manufacturers of Mechanics' Tools. They advise us that the officers, directors, management and location remain the same as formerly.

ROCKFORD BIT COMPANY, Kokomo, Ind., advise us that they sold more goods during 1898 than in any year since they were established, each month being a record breaker as to sales. Notwithstanding that during the fall and winter their new buildings were completed and new machinery installed, thus largely increasing the capacity of their works, they state that they were early this year obliged to withdraw all quotations, owing to the large number of orders entered, and they are finding it difficult to keep their regular customers supplied with sufficient goods to meet regular demands. The company employ no traveling salesmen, the business largely coming through the mails from houses throughout the United States and Canada.

H. M. PUTNAM, formerly connected with the Simonds Rolling Machine Company and later with the Fitchburg Steel Ball Company, has accepted a position with the Iver Johnson's Arms & Cycle Works of Fitchburg, Mass.

THE SMITH & HEMENWAY COMPANY, 20 Warren street, New York, on or about May 1 will move from their present address to 296 Broadway.

J. E. SMITH, third vice-president of the Simmons Hardware Company, St. Louis, Mo., is on a visit of two or three months to Honolulu, in the Hawaiian Islands. Mr. Smith is accompanied by his family.

MALTBY-HENLEY COMPANY, 20 Warren street, New York, who have recently sold out all that pertains to the Hardware branch of their business to the Smith & Hemenway Company, will on or about May 1 remove to 3 Maiden lane, where they will continue their Silver Plated Hollow and Flat Ware business.

THE ONEIDA COMMUNITY, LIMITED, Niagara Falls, N. Y., have purchased the Weldless Chain business of the Garland Chain Company, Rankin Station, Pa., and are removing the machinery to their own plant, which is located on the lands of the Niagara Falls Hydraulic Power & Mfg. Company. The Garland Chain Company will continue manufacturing Common or Welded Chain, as well as Galvanized Pump Chain, and have lately increased their capacity in these lines.

Among the Hardware Trade.

The Tyler Hardware Company, James R. Adams, proprietor, to whose purchase of the wholesale and retail business of the Caspary Hardware Company extended reference was made in our last issue, are located at Tyler, Texas.

W. G. Clark is successor to Clark & Mardis in the retail Hardware business at Corydon, Iowa.

Harry Hankins Hardware Company have succeeded Hankins & Dillard, at Monticello, Ark.

H. J. Winans & Co. have succeeded Frank H. Burr in the Hardware business at Rochester, Mich.

The Hardware firm of Kokernot & Wells, Gonzales, Texas, have dissolved partnership. W. H. Kokernot will continue at the old stand.

Roberts & Nesbitt have purchased a stock of Hardware at Constantine, Mich.

F. Dement & Co., Astoria, Ore., have lately moved into more commodious quarters.

Jordan Hardware Company are successors to C. A. Schrandt in the Hardware and Harness business at Gordon, Neb.

L. A. Doane is now carrying on the business at De Graff, Ohio, formerly conducted by Doane & Pegan.

The store of Horace Beach, at Prairie du Chien, Wis., was burned out a few weeks since. Mr. Beach is rebuilding.

D. M. Simonson is successor to Frank McGovney, dealer in Hardware, Stoves and Implements, Milo, Mo. Mr. Simonson is adding another story to his building.

The Canada Hardware Company, Limited, Montreal, Quebec, have been incorporated with a capital of $50,000. They will conduct a strictly wholesale business in Shelf and Heavy Hardware, Bicyles and Sporting Goods.

F. L. Anderson has succeeded Jas. P. Clagg & Son, at Webster City, Iowa.

M. F. Porter has lately embarked in the Agricultural Machinery business at Kaufman, Texas.

B. T. Meehan has succeeded F. H. Small & Co., at Tiskilwa, Ill.

Tupper & Odden, Osage, Iowa, will soon move into a new store more convenient and commodious than the present quarters.

The Gardner-Warner Hardware Company, Minneapolis, Minn., whose store was damaged in a recent fire in the Boston Block, have made the necessary repairs, and the firm are now in as good shape as ever.

Ackland & Siblerud have commenced business at Hartland, Minn., handling a line comprising Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

J. G. Wright is successor to Wright & McKay, at Wilcox, Neb.

Jones & Watson have succeeded Keen & Co., at Elkhart, Ind. The new firm have materially increased their stock, and are intending to install new fixtures, &c., for the accommodation and display of goods.

The stock of goods of the D. C. Brown Company, Brandon, Vt., will be closed out, and their business consolidated with the old firm of F. R. Button, which was established in 1827.

Ahrenbeck & Terrell are successors to E. L. Ahrenbeck, at Navasota, Texas.

The Vancouver Hardware Company have moved into their new building at Vancouver, B. C. The structure is five stories high, and is equipped with modern fittings throughout. The company do a wholesale and retail business, and their travelers cover the whole province from Atlin to Crow's Nest Pass. They have a branch house at Nelson to handle Kookenay trade.

C. H. Reinholdt, Manning, Iowa, has completed a new Hardware store. The building is 75 x 90 feet in dimensions and of brick. Mr. Reinholdt refers to the business of the past year as exceeding even the prosperous year of 1892, and states that the prospect for the present year is better than any during his 11 years' experience in the Hardware line.

G. W. Bloodgood & Co., Wyandotte, Mich., have disposed of their business to Fowler & Hastings, who are continuing at the old stand. The Messrs. Bloodgood are intending to engage in business at another point not yet determined.

William Rancier has succeeded Polk & Co., at Killeen, Texas.

Wentworth, Anis & Co. have succeeded Wentworth & Wilson at Smith Center, Kan. The new firm have built a 30-foot addition to the store.

J. M. Moss & Co., Cainesville, Mo., have added a line of general merchandise to their Hardware stock. Some improvements have also been made in their establishment, which has been thoroughly overhauled. The shelving now runs to the ceiling, rolling ladders being employed.

Wastell Bros. have opened up in business at Columbia, B. C., handling Stoves and Tinware in addition to a line of Shelf Hardware.

The Merritt Hardware Company have succeeded the Southern Hardware Company, at Macon, Ga., wholesalers and retailers of Hardware, Stoves and Tinware, Implements, Sporting Goods, &c.

True & Blanchard Company, Hardware merchants, Newport, Vt., are also interested in the sale of pure Vermont maple sugar and syrup. Situated as they are in one of the best sugar making districts in the State they refer to their ability to supply strictly pure high grade goods at very reasonable prices. They are soliciting private or family orders as well as those for larger quantities.

Poppe & Klahn, Oxford Junction, Iowa, have dissolved partnership. D. W. T. Poppe will continue the Hardware part of the business, and Mr. Klahn the Implement and Lumber part.

J. C. Button, Merrill, Iowa, has sold out to Schindel & Berner.

Toat & Ashbrook, Spickard, Mo., have been succeeded by Wm. M. Ashbrook.

Chas. E. Watson is now carrying on the business at Hemple, Mo., formerly conducted by Devilbiss & Watson.

D. E. Shrauger has succeeded Shrauger & Hansen, at Exira, Iowa.

Hardman & Stands, Lafontaine, Ind., have dissolved. R. D. Hardman is successor.

H. M. Sherwood & Son have purchased the Terrell Hardware stock at Linton, Ind.

Victor J. Bulliett has succeeded Long & Bro., at Corydon, Ind.

De Long & Freed have opened a new Hardware and Implement store at American Fork, Utah.

O. J. Heng has been admitted to partnership in the business of Louis D. Smith, Havelock, Iowa, and the firm style is now Smith & Heng.

Robert McIntyre has succeeded H. McIntyre & Son in the Hardware business at Bellflower, Ill.

Tarver, Henslee Company have succeeded Tarver & Henslee, at Rodebud, Texas. The company are intending to build a new store during the coming summer. Its dimensions will be 60 x 120 feet.

The J. A. Tappin Hardware Company, Helena, Ark., have been incorporated with a capital of $25,000. The company are successors to J. A. Tappin in the wholesale and retail business.

W. Marvel has succeeded Marvel & Berryhill in the Agricultural Implement business at Gresham, Neb.

Hubbell & Keeler have bought the stock of W. H. Smith & Co., Norwalk, Conn. They have also purchased the business of the South Norwalk Hardware Company, South Norwalk, and removed the stock to Norwalk.

Barker & Belden, Pittsfield, Mass., have dissolved. Mr. Barker's interest in the firm has been purchased by Wm. S. Smith, formerly in business at South Norwalk, Conn., and the style has become the Hardware Supply Company, William S. Smith and Frederick G. Belden being proprietors.

I. C. N. Cottrell has bought the interest of E. A. Fradenburgh in the Hardware firm of Cottrell & Fradenburgh, Faribault, Minn., and will again continue the business under his own name.

M. R. O'Neill, who is well known to the Minnesota trade, has disposed of his business at Graceville to R. A. Costello of Duluth, who has had many years' experience in this line.

The corporate name of the Wm. Frankfurth Company, Milwaukee, Wis., has been changed to Peter Paulus Hardware Company. The primary reason for the change was the similarity of the name to that of the Wm. Frankfurth Hardware Company of the same city, causing annoyance to both companies. Mr. Paulus has been president of the company since their incorporation, and his name has accordingly been substituted for that of Wm. Frankfurth, one of the former proprietors. The ownership and management of the concern continue unchanged.

J. B. Collins has bought out W. D. Craig's Hardware and Implement business at Gayville, S. Dak.

Davidson & Co., Weston, W. Va., have been succeeded by Bailey & Koblegard.

W. A. Polk & Son, Oaktown, Ind., have admitted a partner, W. E. Walker, and the style has been changed to W. A. Polk & Co.

J. H. Rees & Co. have purchased the stock of Eimer Hardware Company at Costello, Pa., and will continue at the same stand adding Harness to lines formerly carried.

The Columbus Rubber & Belting Company, Columbus, Ohio, realizing that this style does not adequately describe the varied and extensive lines of Mill and Mine Supplies they are now handling, and for the purpose of having a more appropriate style, have changed the name of the corporation to the Columbus Mill & Mine Supply Company.

Young & Young, Newmarket, N. H., have recently moved to larger and more commodious quarters. They now occupy two floors 120 x 25 feet in dimensions and have added materially to their former stock. They are dealers in Agricultural Implements and Stoves as well as Shelf and Heavy Hardware.

Miscellaneous Notes.

Patent Extension Gas Fixture.

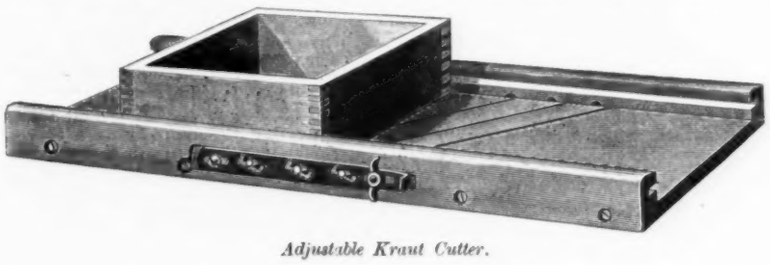
Edward Milier & Co., Meriden, Conn., and 28-30 West Broadway, New York, have just put on the market a No. 50 patent extension gas fixture. It is ready for service as soon as connected with the gas pipe, and can be used either up out of the way or drawn down for sewing or reading purposes. Closed it is 29 inches long and is 57 inches extended. It has a ⅜-inch regular gas nipple, takes a 10-inch dome shade and is made of brass, polished finish. Concealed by the brass canopy at the top is a mechanism for raising or lowering by the use of side chains the lower or burner portion. Gas is conducted between the two sections by a flexible rubber tube, which is always kept in spiral form by a shaped wire extending the length of the tube inside of it. The rubber tube can be removed and renewed readily if necessary. The gas supply is controlled by a shut off cock placed immediately under the canopy and operated by the chains attached to the arms of the cock. This arrangement relieves the flexible tube of any pressure when the fixture is not in use. While adapted for any gas burner, it is especially designed for incandescent lights in connection with Welsbach or other mantles.

Bathroom Fixtures.

Meriden Bronze Company, 30 Park place, New York, and Meriden, Conn., manufacturers of lamps, gas portables and art goods, have recently brought out a large line of high grade bathroom fixtures in polished nickel on cast and wrought brass, according to the character of the fitting. In many of the kinds there are a number of styles and sizes. The assortment consists of towel racks, robe hooks, towel rings, soap dishes, tumbler holders, tooth brush and powder holders, sponge holders, combination holders for sponge and soap, toilet paper holders, towel shelves, &c.

Adjustable Kraut Cutter.

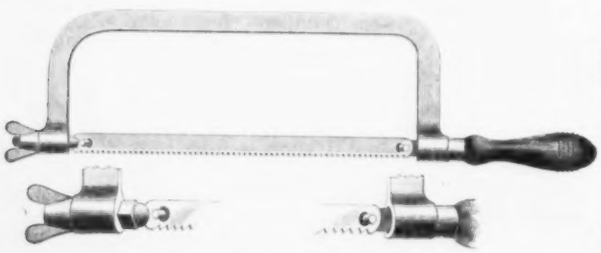
The illustration herewith shown is of a kraut cutter put on the market by Henry Disston & Sons, Philadelphia, Pa. The adjustment of the hight of the cutting blades is effected by pulling the sliding lever at the side of the cutter. It is referred to as being made of seasoned cherry lumber, with knives of best cast steel.



Adjustable Kraut Cutter.

Adjustable Hack Saw Frame.

The accompanying cut relates to an adjustable hack saw frame offered by Henry Disston & Sons, Philadelphia,



Adjustable Hack Saw Frame.

Pa. The frame is adjustable for blades from 6 to 12 inches in length and is referred to as well and strongly made.

The Bayer Thuroscope.

Bayer & Co., 19 North Juniper street, Philadelphia, are offering the thuroscope, or window mirror, shown in the accompanying cuts. Fig. 1 shows the part facing the street, where it is fastened to the window sill by the

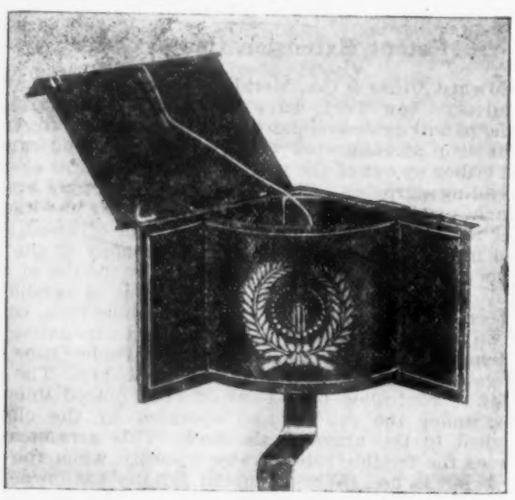


Fig. 1.—The Bayer Thuroscope.

upright cleat, as shown, extending below the thuroscope. Fig. 2 represents it as it appears from the interior of the room, the two mirrors, placed at an adverse angle of 45 degrees, showing two sides of the street in both directions, it is stated, from six to eight blocks, with a third

Fig. 2.—The View of the Street.

glass at an angle on top enabling those within to observe any one on the front door step without raising the window or being seen. It is pointed out that the device can be used with equally good results at any window, second, third or fourth floor, that it presents an ever changing panorama and that it is not only useful to the housekeeper, but that it relieves the monotony of indoor life for the invalid.

A joint stock company under the style of the Sistersville Hardware Company have been organized at Sistersville, W. Va., and the stocks and good will of the following firms purchased: Berry & Colbert, W. G. Gorham and Smith & Boeshar. The new company will have a capital stock of $100,000. The incorporators are F. M. Berry, F. J. Colbert, E. A. Durham, R. McCormick, Geo. E. Work and F. D. McCoy.

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Crescent Acetylene Gas Lamp.

Hermann Boker & Co., 101-103 Duane street, New York, are marketing the Crescent acetylene gas lamp for cycle and carriage use, as illustrated herewith. It is

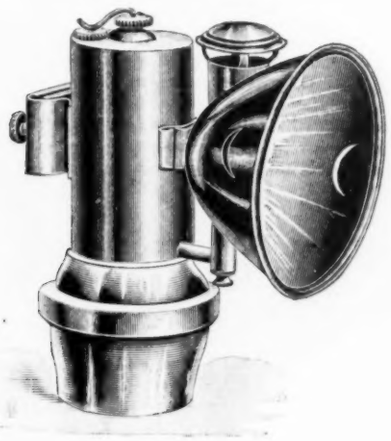

Fig. 1.—Crescent Acetylene Gas Lamp.

spoken of as light, small and attractively designed, weighing 10 ounces and being 5½ inches high. It is made of 24-gauge brass, nickel finished, and has a capacity of six hours' burning. Attention is drawn to the facility with which carbide residuum is removed by pulling out a false bottom. The water is fed in well regulated drops and the supply controlled by the valve D, and by means of the perforated tube allowed to come in contact with the carbide, not only at the bottom, but on the sides, thus delivering the water at several points at once, causing, it is said, a very steady flame through the even chemical action. Fig. 2 is a sectional view showing the construction of the lamp. The water tank A is filled through the opening B. The water valve D regulates and controls the water, the pointer E indicating the amount of water fed. C is a receptacle for the

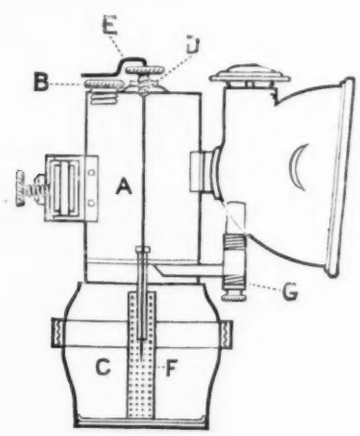

Fig. 2.—Sectional View of Lamp.

carbide and F a perforated tube to keep the carbide out. If the burner needs cleaning a bicycle pump can be screwed into the opening G, which is threaded to fit standard nipples.

Lewis Quick Acting Vises.

Lewis Tool Company, 44 Barclay street, New York, have just brought out the Lewis rapid transit or quick acting vises, here illustrated, in both swivel and plain bottoms. The main characteristics emphasized by the manufacturers are efficiency and pronounced simplicity, with but one more piece than in regular screw vises, they claiming for it the same positive action, durability, tenacity and power of screw vises. In use the movable jaw can be placed against the work in a moment, whatever its position, when with less than a complete turn of the handle material can be rigidly gripped, the jaws beginning to gather on the object as soon as the handle turns, gathering in all on an average vise about ⅝ inch. Fig. 1 is a sectional view showing the working parts, Fig. 2 illustrating the threaded cylinder, with a longitudinal section cut away, together with the rack above the cylinder, with which the teeth, pointed at the ends, engage instantly when the lever is turned. It will be seen that the portion of the cylinder from which the threads have been removed permits the outer jaw to move back and forth freely when the lever is reversed.

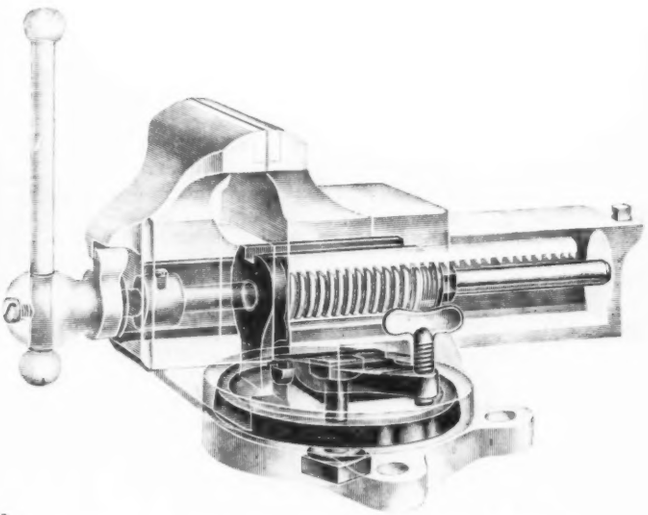

Fig. 1.—Sectional View of Lewis Swivel Quick Acting Vise.

The handle turns a shaft which is keyed to the inner side of the threaded cylinder referred to. It is also pointed out that the teeth, having very long bearing sur-

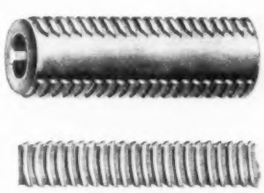

Fig. 2.—Section of Toothed Cylinder and Rack.

faces, cannot slip or easily get out of order. No springs are used in the vise. Figs. 1 and 3 illustrate the swivel

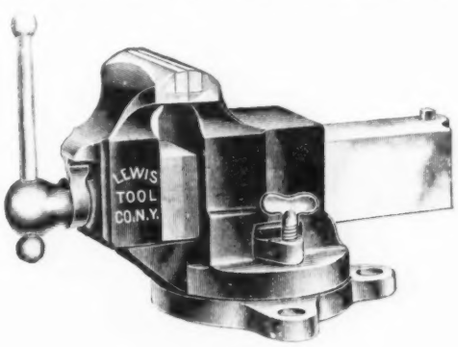

Fig. 3.—Lewis Swivel Quick Acting Vise.

vise, which can be instantly swung to any desired position on the machine finished cone of the base and by

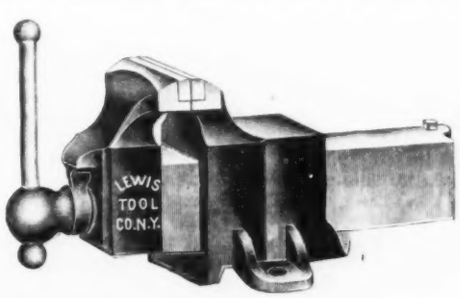

Fig. 4.—Lewis Plain Bottom Quick Acting Vise.

a turn of the thumb screw held securely anywhere. The thumb screw is at the end of a strong lever through which the center bolt passes, the other

end of the lever being held in position by two lugs for that purpose. The handle can be held at any point for convenience in revolving by the set screw in Fig. 1. The jaws are of crucible steel. It is stated that several of the vises have been in some of the largest shops for over a year and have successfully withstood severe tests. The vises are made in both swivel and flat bottoms, as seen in Figs. 3 and 4, each in six sizes, with jaws 3½, 4, 4½, 5, 5½ and 6½ inches wide, opening 5, 6, 7, 8, 9 and 10 inches. The weights vary according to size and style from 30 to 153 pounds. The vises are listed at from $8.50 to $35 each.

Trojan One-Hand Nail Puller.

Hagen & Reid, Troy, N. Y., are offering the one-hand nail puller which is shown in the accompanying cut two-thirds its actual size. It is made of tool steel with

Trojan One-Hand Nail Puller.

malleable iron handle, and is designed to pull tacks, wire brads and wire nails as large as 6d. It is referred to as noiseless, light and strong. The noiseless feature is pointed out as particularly adapting it for use in hardware stores, where the usual noise of opening boxes in the presence of customers, especially ladies, is disagreeable and annoying. In the home, it is pointed out, it fills the place of the tack puller, at the same time being large enough to open boxes.

H. D. Hull, Troy, N. Y., advises us that in 1896 the H. D. Hull Company were formed to avoid possible litigation, Mr. Hull holding twenty-three twenty-fifths of the stock. The matter in question having been settled, and finding no advantage but rather expense and annoyance in the style, the H. D. Hull Company have been dissolved and the old firm name of H. D. Hull resumed. All demands against the company, it is stated, will be met by Mr. Hull.

The Walda Improved Sectional Window Weight.

The accompanying cuts relate to an improved sectional window weight offered by Barney & Reed Mfg. Company, 85 Water street, Boston, Mass. The weight hangs from the center to permit free running in the box, the eye being smooth, it is explained, so that there is no wear at points where the cord comes in contact with the shoulder in the head of the weight. It is shown that there is no possible chance of the pieces becoming detached after they have been placed in the box, as they couple and uncouple

The Walda Improved Sectional Window Weight.

only when held nearly at right angles, but it is stated they can be easily removed at any time if necessary. The weight is made round and square to meet the requirements where small, medium or extremely heavy windows are used, with ample or cramped pocket room as the case may be. It is so designed that a workman, by the use of the weight, can balance a sash exactly right before leaving it without breaking a weight or sending to the store for another. Half pound sizes are made by coupling on a ½-pound piece. The weights are packed in small crates containing 100 pounds of a size, both crates and weights being plainly marked. A crate or two of each size may be placed on the floor where the work is being done, so that the sash may be balanced as the workmen proceed. The manufacturers state that the merchant is able to furnish every size required if he has the number of pounds in stock, while not so much capital is invested in the same proportion of stock. Reference is also made to the saving of space and labor, and non accumulation of old stock. The manufacturers furnish fixtures constructed to fit the head of the weight where chain is used. They also carry the thimbles and rings for attachment to the sash.

Adjustable Compass Saw No. 9.

Henry Disston & Sons, Philadelphia, Pa., have put on the market the adjustable compass saw shown in the accompanying illustrations. The handle is apple

Fig. 1.—Adjustable Compass Saw No. 9.

wood, carved and polished, and so constructed that new blades may be quickly inserted. The handle has a take up device, or tightening screw, Fig. 2, to compensate for

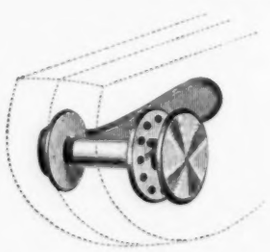

Fig. 2.—Take Up Device for Compass Saw.

different thicknesses of blades, which adds to its convenience when one has use for compass, keyhole and pruning blades. The No. 9 is put up only with compass blades.

Current Hardware Prices.

MARCH 29, 1899.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices, while lower prices are often given to larger buyers.

The character @ is used to indicate a range of price: thus discount 50 & 10 @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranges from 50 & 10% to 50 & 10 & 5%.

Many of the lists referred to in the following quotations are given in *The Iron Age* Standard Hardware Lists (price 50 cents). On many other articles, however, the different manufacturers have their own lists, which they will send to the trade on application. In the advertising columns will be found the announcements of manufacturers of nearly all kinds of Hardware, who will be pleased to furnish the trade information in regard to their goods and prices.

In the present condition of the market while many advanced prices are announced by manufacturers, in many cases lower prices are made by the wholesale trade who have stocks on hand purchased at former quotations.

Adjusters Blind—

Domestic, ₽ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—*See Fasteners, Blind.*

Window Stop—

Ives' Patent.....40%
Taplin's Perfection.....15%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—

Burton's No. 1.....₽ doz. pr., $1.00
Burton's No. 2.....₽ doz. pr., $0.75
Fernald's, Wire.....₽ doz. pr., $0.75

Anvils—American—

Eagle Anvils, ₽ lb.....7¼@7¾¢
Hay-Budden, Wrought.....8½@8¾¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson, ₽ lb.....7¼@8¢
Trenton, Wrought.....₽ lb 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Solid Swedish Steel.....10¢@10½¢
Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur.....75&10@...%
Boring Machine Augers.....75&10@...%
Car Bits, 12-in. twist 60&10&10@70&10%
Jennings' Pattern Car Bits...60@60&10%
Jennings' Pattern Auger Bits.....70&5@70&10%
Adams Art Auger Bit.....30%
Cincinnati Bell Hangers' Bits.....40%
Ford's Auger and Car Bits.....40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugsley's Bits.....20%
Pugh's ennings' Pattern.....35%
Snell's Car Bits.....60&10&5@70%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....60&10&5@60&10&10%
Cincinnati, for metal.....50&5@50&10%
Syracuse, for wood.....40%
W. & B. Wood Boring Brace Drills...40%

Expansive Bits—

Clark's small, $18; large, $26.....50@50&10%
Lavigne's Clark's Pattern, No. 1, ₽ doz., $26; No. 2, $18.....50@50&10%
Steer's No. 1, $20; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut...₽ gr. $2.75@3.25
German Pattern.....₽ gr. $5.00
Double Cut, makers' lists.....60@50&10%
See also *Gimlets.*

Hollow Augers—

Bonney's Adjustable, ₽ doz.....$16.00
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
Stearns', Common, No. 6.....10%
Stearns', all other numbers.....20&10%

Ship Augers and Bits—

Ford's.....40&10@40&10&10%
Snell's.....40&10@40&10&10%
L'Hommedieu's.....40& 0&5%
Watrous'.....15&10@15&10&10%
.....40@40&10%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....₽ gr. $3.00@3.75
Unhandled, Shouldered..₽ gr. 65@70¢
Unhandled, Patent.....₽ gr. 70@75¢
Peg Awls:
Unhandled, Patent.....₽ gr. 33@35¢
Unhandled, Shouldered..₽ gr. 65@70¢
Scratch Awls:
Handled, Common....₽ gr. $3.25@3.75
Handled, Socket....₽ gr. $11.00@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First quality, best brands..$5.00@5.25
First quality, other brands...$4.25@4.75
Jobbers' Special Brands, good quality..
Cheap Handled Axes.....$4.00@4.75
Beveled, add 25¢ ₽ doz.

Axle Grease—See *Grease, Axle*

Axles—

	Iron.	Steel.
Concord, loose collar	4¼¢	4½¢
Concord, solid collar	5¼¢	5 ¢
No 1 Common	3½¢	3¼¢
No. 1½ Com., New Style, 4 ¢		3¾¢
No. 2, Solid Collar	4¼¢	4 ¢
Nos. 7, 8 11 to 14	60&10&5%	
Nos. 15 to 18	50%	
Nos. 19 to 22	70%	

Balances—

Sash—

Caldwell low list.....30%
Vanderbilt.....30%

Spring—

Spring Balances.....50&50@10%

	No. 2000	20	30
Chatillon, ₽ doz.	$0.60	.70	1.50

Chatillon Straight Balances.....50%
Chatillon Circular Balances.....50&10%

Barb Wire—See *Wire, Barb*

Bars—Crow—

Steel Crowbars, 10 to 40 lb. ₽ lb 2¼@2½¢

Beams, Scale—

Scale Beams, List Jan. 12, '82..50@50&5%
Chattillon's No. 1.....40%
Chattillon's No. 2.....50%

Beaters—Egg—

New Dover (Dover Stamping Co.).
₽ doz. 75¢ ₽ gr. $7.50
Dover, Ex. Family size.....₽ doz. $2.00
New Dover.....₽ doz. 75¢; ₽ gro. $7.50
Dover (Standard Co.), No. 10, ₽ gro. $5.50; No. 5, $6.00; No. 15, $12.00
Dover (Tap in Pat. Imp.), No. 100, ₽ gro. $7.00; No. 150, ₽ doz. $2.00.....
Lebanon.....₽ doz. $2.75@$3.00
Spiral.....₽ gr. $4.25@$4.50
Standard Lycn., ₽ doz. $1.75; 3 doz. $5.00
Wonder (S. S. & Co.).....₽ doz. 75¢

Bellows—

Blacksmith—

Standard List.....70&10@70&10&5%
Often sold at net prices:

Inch....	30	32	34	36	38	40
Each....$3.75	4.00	4.75	5.25	6.00	7.00	

Extra Length:
Each....$4.50 5.00 5.50 6.25 7.00 8.50

Moulders—

Inch....	9	10	11	12	14	16
Per doz.	$6.0	6.50	7.75	8.75	11.00	13.25

Hand—

Inch.....	6	7	8	9	10	12
Per doz.	$3.25	3.50	3.75	4.50	5.25	6.00

Bells—Cow—

Wrought, Sheep and Cow....60&10@70%
Kentucky.....75&10%
Western.....70%
Jersey.....75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....60&10%
Lever, R. & E. Mfg. Co.'s.....60&10%
Lever and Pull, Sargent's.....45&10@45&10&5%

Hand—

Hand Bells, Polished.....60&10& 0@70%
White Metal.....60&10&10@70%
Nickel Plated.....50&10@60%
Swiss.....50&10@60%
Silver Chime.....40@40&10%

Miscellaneous—

Farm Bells.....₽ lb 2¢
Steel Alloy Church and School...50&10%

Belting

Rubber—

Common Standard.....75&10@75&10&5%
Extra.....70&10@70%
Standard.....70&10@75%

Leather—

Best Oak Tanned.....60&10@60&10&10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Brettell Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%
John S. Leng's Son's 1899 list:
Balls.....50%
Chain.....50%
Parts.....50%
Spokes.....50&10%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Common Jap'd Sheaves.....75@75&5%
Eddy's All Steel, Common Bushed....70%
Eddy's All Steel, Bronze Bushed...60&5%
Hartz All Steel, Common Bushed.50&10%
Hartz All Steel, Bronze Bushed..50&10%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Pat. Adj., Perfect Safety and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Market somewhat irregular.
Manufacturers quote.....30&10@40%
Jobbers often sell.....40&10@50%

Bolts—

Carriage, Machine, &c.—

Common, list Jan. 30, '95.....70&15@75&10%
Norway Iron, $3.00, list Oct. 7, '84.....75&10@75&10&5%
Phila. Eagle, $3.00 list.....85&15%
Bolt Ends, list Jan. 30, '95.....70&10@70&10&5%
Machine list June 12, '96.....75&10@75@10&5%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch	3	4	5	6	8
Per doz.	$0.27	.30	.38	.48	.66

Cast Iron Bottom, Japanned:

Inch	6	8	10
Per doz.	$0.83	1.05	1.65

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz.	$1.10	1.32	1.87

Cast Iron Shutter, Brass Knobs:

Inch	6	8	10
Per doz.	$0 49	.77	.88

Wrought Barrel Brass Knob:

Inch	3	4	5	6	8
Per doz.	$0.44	.50	.61	.70	1.28

Ives' Patent Door.....65@65&10%
Wrought Flush—
B. K., Sargent's list.....50&10@60%
B. K., Stanley's list..60&10@60&10&5%
Sunk, Sargent's or Stanley's list.....50&10@50&10&5%
Wrought Shutter, Standard list 60&10&7½@70%
Wrought Square, Standard list 75@75&10%

Stove and Plow—

Plow.....70@70&10%
Stove, list August 27, 1898.....70&10%

Tire—

Common, list Feb. 28 '83.....70&10@7 %
American Screw Company:
Norway Phila., list Oct. 16, '84.75&10%
Eagle Phila., list Oct. 16, '84.....80&10%
Bay State, list Feb. 28, '83.....70&10%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84. 75&10%
Eagle Phila., list Oct. 16, '84....80&10%
Eclipse, list Feb. 28, '83.....70&10%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....7 &10%
Keystone Phila., list Oct. '84....80&10%
Norway Phila., list Oct. '84.....75&10%

Borers, Tap—

Borer, Tap, Ring, with Handle:

Inch	1¼	1½	1¾	2
Per doz.	$3.75	4.75	5.25	6.75

Inch.....2¼ 2½
Per doz.....$8.00 11 00
Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—*See Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Letter—

Tatum's.....50%

Braces—

NOTE.—Most Braces are sold at net prices.
Barber's.....60@60&10%
Common Ball, American.....$1.10@1.20
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....60&10&5@60&10&10%

Brackets—

Shelf, plain; Regular, list....75@75&10%
Stowell's Shelf.....70&5%
Bradley Shelf Brackets.....80&1 %

Bright Wire Goods—See *Wire.*

Broilers—

Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₽ gr. $22.00 @ $24.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Cast Brass, Tiebout's.....
Wrought Brass, list Sept., 96.....50%
40&5@40&10%

Cast Iron—

Fast Joint, Broad.....60@60&10%
Fast Joint, Narrow...60&10@60&10&10%
Loose Joint.....
Loose Pin.....
Mayer's Hinges.....} 75&10%
Parliament Butts.....

Wrought Steel—

Loose Joint.....
Table and Back Flaps.....
Narrow and Broad.....} List Apr. 1, 1895 75&10
Inside Blind.....
Loose Pin.....} @75&10&10%
Loose Pin, Ball and Steeple Tip.....
80&5@80&10&5%
Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....10%
1200 series.....
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks, Toe—

	3-16	¼	5-16	⅜	7-16	½	9-16
Burke's, One Prong, Blunt	4@4½¢						
Burke's, One Prong, Sharp	5@5½¢						
Burke's, Two Prong, Blunt	5@5½¢						
Burke's, Two Prong, Sharp	6@6½¢						
Gautier, One Prong, Blunt	5½@6¢						

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:

	5	8	10 gal.
Concave Cover	$1.25	$2.00	$2.20
Convex Cover	1.40	2.15	2.35
Illinois Pattern	....	1.80	2.00
New York Pattern	....	1.75	1.95
Baltimore Pattern	....	2.25	2.45
Chicago S. Co. Seamless Neck.	....	2.35	2.55

	5	8	10 ga
Iowa	$1.30	$1.50	$1.65 each
Sturges	1.30	1 50	1.65 each
Elgin	....	1.75	1.90 each
Chicago	1.50	1.90	2.00 each

Cans, Oil—

Galvanized Blue Band, 1-gal., ₽ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₽ gro. $54; 5-gal., $60, 10-gal., $180.00
Glass Oil.....₽ doz. $1.60@$1.85

Caps—Percussion—

Eley's E. B	50¢
G. D	₽ M. 32@34¢
F. L	₽ M. 37@40¢
G. E	₽ M. 47@50¢
Musket	₽ M. 57@60¢

Primers—

Berdan Primers, $1.60.....2%
B. L. Caps (Sturtevant Shells) $1.00...2%
All other primers.....$1.00@$1.10

Carpet Stretchers—See *Stretchers, Carpets.*

Cartridges—

Note.—These prices are sometimes shaded by jobbers.
B. B. Caps, Con. Ball Swgd.....$1.90
B. B. Caps, Round Ball.....$1.12@1.18
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal. $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting 15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges.....15&5&2%
Rim Fire, Military.....50&2%
.....15&5&2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed Plate, etc.....50@70&5%
Martin's Patent (Phœnix).....60@60&5%
Payson's Anti-friction Furniture.....70&10&5%
Payson's Anti-Friction Truck.60&10&5%
Standard Ball Bearing.....50%
Tatum's Anti-friction.....60@60&10%
Tucker's Patent, low list.....50@50&5%

Cattle Leaders—See *Leaders, Cattle.*

Chain—

American Coil, Cask Lots:

	3-16	¼	5-16	⅜	7-16	½	9-16
	$5.10	4.60	3.70	.35	8.20	3.10	3.05

	⅝	¾	⅞	1 Inch.
	$3.00	2.90	2.80	2.80

For less than Cask lots add 1-10c.
German Coil, list July 24, '97.....60&10&10@70%
German Halter Chain, list July 24, '97.....60&10&10&2@70%
Trace, Wagon and Fancy Chains, list revised April, '98.....60&10&10@70%
Breast, Hitching and Rein Chains
Covert Saddlery Works.....70%
Covert Mfg. Co.:
Breast.....45&2%
Halter.....45&2%
Heel.....45&2%
Rein.....45&2%
Stallion.....45&2%
Jack Chain, Iron, list July 10, '93..70&10%
Jack Chain, Brass, list July 10, '93.....60@60&10%
Garland's Eureka Weldless Coil.....75%
Garland's Eureka Weldless Halters 70&10%
Garland's Eureka Weldless Cow Ties 60%
Oneida Halter Chain.....60@60&10%
Gal. Pump Chain.....lb lb 3¼@4¢

Chalk—(From Jobbers.)

Carpenters', Blue.....₽ gr. 50@52¢
Carpenters', Red.....₽ gr. 45@47¢
Carpenters', White.....₽ gr. 40@42¢
See also *Crayons.*

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's.....40%
Eclipse.....60@60&10%
Norton.....40@50%

Chisels—

Socket Framing and Firmer

Standard List.....75&10@80%
Buck Bros.....30%
Charles Buck.....30%
Douglass.....30%
L. & I. J. White.....75&10@80%
.....30@30&5%

Tanged and Miscellaneous.

Buck Bros. 30¢
Charles Buck 30%
Tanged Firmers 40&10@50%
L. & I. J. White, Tanged 25&5%
Cold Chisels, good quality ₱ lb 14@16¢
Cold Chisels, fair quality ₱ lb 12¢
Cold Chisels, ordinary ₱ lb 7@7½¢

Chucks—

Beach Pat., each $8.00 20%
Graham Patent 33⅓%
Morse's Adjustable, each $7.00 25%
Syracuse, Balz Pat 30%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks 30%
Independent Lathe Chucks 40%
Improved Planer Chucks 20%
Universal Lathe Chucks 40%
Union Mfg. Co.:
Combination 40%
Czar Drill 30%
Geared Scroll 33⅓%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable Cincinnati 25&10%
Adjustable, Hammers' 20@20&5%
Adjustable, Stearns' 30@30&10%
Cabinet, Sargent's 45&10@50&10%
Carriage Makers', P., S. & W. Co. 40&10%
Carriage Makers', Sargent's 50&10@50&10&5%
Bestv. Parallel 33⅓%
Cincinnati Carpenters', &c 25&10%
Joiners' Clamps, Tatum's 25&10%
R. I. Tool Co.'s Wrought Iron 25%
Saw Clamps, see *Vises, Saw Filers'*.
Stearns Malleable, with Wrought Iron Screw 75@75&5%
Stearns Steel 25&10%
Tatum's Joiners' Adjustable 25&10%
Tatum's Quilt, Cabinet, &c 40%
Warner's 40&10@40&10&5%

Cleaners, Walk—

Star Socket, All Steel ₱ doz. $4.00 net
Star Shank, All Steel ₱ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros., Flat Hds., 30%; Rd. Hds., 40%
New Haven Edge Tool Co.'s 40%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb 33⅓&7½%
P., S. & W 33⅓&5@33⅓&10%
L. & I. J. White 25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet ₱ doz. $7.20
Mascotte Toilet ₱ doz. $8.40
Monitor Toilet ₱ doz. $9.00
Stewart's Patent ₱ doz. $10.00
Hotchkiss Horse Clippers, ₱ doz.:
No. 10, $18; No. 30, $15.60; No. 22, $13.80; No. 20, $13.20; No. 8, $10.80.
Hotchkiss Toilet Clippers, ₱ doz.:
No. 1, $9.60; No. 101, $10.80; No. 201, $10.80; No. 300, $13.20; No. 500, $15.

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch 75@75&10%
Norway, ¼ and 5-16 inch 70@70&10%

Cloth and Netting, Wire

—See *Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) 70@70&10%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Brass, Pope & Stevens' list 40%
Chapman Mfg. Company, new list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather, Pope & Stevens' list 40%

Combs, Curry—

Hotchkiss', List Nov. 20, '96 25&10%
New York Stamping Co., List Sept. 17 '97 25&10%
New Centaur Spring Curry Comb:
With Wire Handle ₱ doz. $1.20
With Strap Handle ₱ doz. $1.60

Compasses, Dividers, &c.

Ordinary Goods 70&10@75%
Bemis & Call Co.'s:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 70%
Calipers, Inside or Outside 70%
Calipers, Wing 60%
Compasses 50&5%
J. Stevens A. & T. Co 25&10%

Coolers, Water—

S. S. & Co.: 2-gal., $2.79; 3-gal., $3.20; 4-gal., $3.60; 6-gal., $4.75; 8-gal., $7.20; 11-gal., $11; 14-gal., $14 each 60%

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab and Fancy, ₱ lb 55¢...30%
Braided, White, ₱ lb ...14@20%
Cable Laid Italian ₱ lb A, 18¢; B, 16¢
Common India ₱ lb 8½@9¢
Cotton Sash Cord 14½¢
Patent Russia ₱ lb 12½@13¢
Cable Laid Russia ₱ lb 13½@14¢
India Hemp, Braided ₱ lb 13¢
India Hemp ₱ lb 9¢@10¢
Patent India ₱ lb 10½¢
Pearl Braided ₱ lb 14¢
Massachusetts, White 17¢
Eddystone Braided Cotton ₱ lb 18¢
Harmony Cable Laid Italian ₱ lb 18¢
Ogawan Mills:
Crown, Solid Braided White ₱ lb 18¢
Braided, Giant, White ₱ lb 16¢
Peerless:
Cable Laid Italian 16¢
Cable Laid Russian 13¢
Cable Laid India 11¢
Braided India 18¢
Samson:
Braided, Drab Cotton ₱ lb 33@35¢
Braided, Italian Hemp ₱ lb 31@33¢
Braided, Linen ₱ lb 53@56¢
Braided, White Cotton ₱ lb 27@30¢
Silver Lake:
A quality, Drab, 40¢ 15&7½%
A quality, White, 35¢ 15&7½%
B quality, Drab, 35¢ 15&7½%
B quality, White, 30¢ 15&7½%
Italian Hemp, 40¢ 15&7½%
Linen, 57½¢ 15&7½%

Wire, Picture—

Braided or Twisted 85@85&5%

Corn Knives and Cutters

—See *Knives, Corn.*

Crackers, Nut—

Acme, Japanned, ₱ gr. $30 40%
Acme, Nickel Plated, ₱ gr. $30 20¢
Turner & Seymour Mfg. Co 50%

Cradles—

Grain 55%

Crayons—

White Round Crayons, ₱ gross 5@6¢
Cases, 100 gr., $4.50@$5.00, at factory.
D. M. Steward Mfg. Co.:
Metal Workers', ₱ gr. $2.50 ...20@25%
Railroad, ₱ gr. $2.00 20@25%
Rolling Mill, ₱ gr. $2.50 20@25%
Soapstone Pencils, ₱ gr. $1.50 ..20@25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ₱ doz. $7.00
Fort Madison, Light ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ₱ doz. $10.00

Curry Combs—

See *Combs, Curry.*

Cutters— Meat—

American 30%
Nos. 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Connecticut, No. 0, $2.00; No. 1, $2.50; No. 8, $3.00; No. 12, $3.50 33⅓%
Enterprise 25@25&7½%
Nos. 5 10 12 22 32
Each $2 $3 $2.50 $4 $6
Dixon's, ₱ doz. 33⅓%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Hale's, ₱ doz. 70@70&5%
Nos. 11 12 13
$27.00 $33.00 $45.00
Home No. 1, ₱ doz. $26.00 60%
Little Giant, ₱ doz. 50&10%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Miles' Challenge, ₱ doz. 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
New Triumph No. 605, ₱ doz. $24.00 33⅓&5%
Woodruff's, ₱ doz 33⅓%
Nos. 100 150
$15.00 $18.00
Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers 25@30%

Slaw and Kraut—

Henry Diss on & Son:
Slaw, Corn Grater, &c. 40%
Crout Cutters 24 x 7, 26 x 8, 30 x 9 55%
Crout Cutters 36 x 12, 40 x 12 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 50@50&10%
Slaw Cutters, 1 Knife, ₱ gr. $15@$18
Slaw Cutters, 2 Knife, ₱ gr. $20@$27

Tobacco—

All Iron, Cheap ₱ doz. $4.50@5 00
Enterprise 25@30%
National, ₱ doz. $21.00 30&5%
Sargent's, ₱ doz. $24.00 60@60&10%

Washer—

Appleton's, ₱ doz. $16.00 60&10@60&10&10%
Bonney's ₱ doz. $4.25
Cincinnati 25&10%
Tatum's 25&10%

Diggers, Post Hole, &c.—

Gem, Improved ₱ doz. $8.50@$9.00
Iwan's Improved Post Hole Auger, 40&5%
Iwan's Perfection Post Hole Digger, ₱ doz. $10.00
Samson, ₱ doz. $34.00 25%
Vaughan's Post Hole Auger, ₱ doz. 5.25@5.75

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmith's Drill, each $1.50
Bench Drills, Stearns' 50@50&10%
Blacksmiths' Self-feeding, each $7.50, 20%
Breast, Millers Falls, each $3.00 25%
Breast, P., S. & W. 40&10%
Goodell Automatic Drills 40&5@40&10%
Ratchet, Bignall & Keeler 30&5%
Ratchet, Curtis & Curtis 25%
Ratchet, Ingersoll's 25%
Ratchet, Parker's 40%
Ratchet, Weston's 20@25%
Ratchet, Whitney's 20&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 33⅓%

Twist Drills—

Standard List 60&10&5@60&10&10%

Drill Bits or Bit Stock

Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9 40%
Brace Screw Drivers 25&10&5%
Buck Bros. 30%
Buck Bros' Screw Driver Bits 27½%
Champion 40&10%
Disston's Flat Blade, Electric, &c 70%
Douglass Mfg. Co. 20@20&10%
Electric Spiral 50&10&10&5%
Eilrich's Socket 40&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet 35%
Goodell's Automatic 50&10&10@50&10&10&5%
Hercules, W. & B. 70@75%
Howard-Allard Spiral 50&10&10&5%
Jones Reversible 50%
Knapp & Cowles:
Nos. 1 and 2 70&10%
No. 3 60&10%
Nos. 4 and 00, Acme and Ideal 60&10%
Mayhew's Black Handle 50%
Mayhew's Monarch 45&10%
New England Specialty Co 50&10%
New York, Manhattan and Handy 20%
Sargent & Co.'s:
Nos. 1, 20, 40 and 60, 50&10@50&10&5%
Nos. 50 and 55 50&10&10@60&5%
Screw Driver Bits ₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles 70&10%
No. 86 75&10%
Syracuse Screw Driver Bits 40%

Egg Beaters—See *Beaters, Egg.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	1.80 gr.	F.FF.
Kegs, ₱ lb	4½¢	5 ¢	3 ¢
½ kegs, ₱ lb	4¾¢	5¼¢	3¼¢
¼ kegs, ₱ lb	5 ¢	5½¢	3½¢
10-lb cans, 10 in case	6 ¢	6¼¢	5¼¢
10 lb cans, less than 10	10 ¢	10¢	8 ¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice

—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's 50&10%

Faucets—

B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots 50&10%
Cork Lined 70&5@70&10%
Metallic Key, Leather Lined 65&10@65&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's No Brand Metal Key 60%
John Sommer's W. P. Metal Key 40%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined 50%
John Sommer's Reliable Cork Lined 60%
John Sommer's Common Cork Lined 70%
John Sommer's Chicago Cork Lined 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar 40%
John Sommer's Cedar (in bbls.) 50&10%
Star 60@60&5%
Star, Metal Plug, new list 40@40&5%
Stearns' Wood, No. 200, Wood-lined Key 50&10%
Stearns' Matchless, Wood, No. 300 60%
Stearns' Gem, Wood, No. 400 60&10%
Lockport, Metal Plug, reduced list 60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00 40%
Lane's, ₱ doz. $36.00 33⅓%
National Measuring, ₱ doz. $36.00 33⅓%

Felloe Plates—

See *Plates, Felloe.*

Fifth Wheels—

Brewster 75&10@80%
Derby and Cincinnati 70&10@75%

Files—Domestic—

Best Brands 70@70&10&10%
Good Brands 75&10@80&5%
Fair Brands 80&5@80&10%
Second Quality 80&10@85%

Imported—

Stubs' Tapers Stubs' list, July 24, '97. 30@33⅓%

Fixtures, Grindstone—

Net prices:

Inch	15	17	19	21	24
Per doz.	$2.50	2.50	2.75	3.25	4.50

Stowell's Grant Grindstone Hanger ₱ doz. $6.00@7.00
Stowell's Grindstone Fixtures 55&10%
P., S. & W. Co. 50&10&10%
Reading Hardware Co. 30&20&10%
Sargent's Patent 70&10@70&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Note.—There is no uniformity in list prices for Steel Goods, the old or 1895 list being often used, discount 60&10@60&10&5%.

Hay, 2 tine 70&2%
Hay, 3 tine 70&2%
Manure, 4 tine 60&5&20&2%
Manure, 5 and 6 tine 70&10&2%
Spading 70&15&2%
Victor, Hay 60&33⅓&2½&2%
Victor, Manure 75&5&2%
Victor, Header 70&12½&2%
Champion, Hay 70&10&2%
Champion, Manure 75&2%
Columbia, Hay 70&7½&2%
Columbia, Manure 77½&5&2%
Columbia, Spading 66⅔&25&2%
Hawkeye Wood Barley 4 tine ₱ doz $5.00; 6 tine, $5.50.
Plated see *Spoons.*

see Trade Report.

Frames—

Saw—

Red, Polished and Varnished ₱ doz. $1.00@$1.10
White ₱ gro. $8.25@$8.50

Screens, Window and Door—

Bonanza Window Screens 60@60&5%
Flyer Window Screens 50&10&5%
Maine Window Screen Frames 50%
Perfection Window Screens 60&60&5%
Phillips' Window Screen Frames 60&5%
Porter's Extension Window Screens 60&5%
Stearns' Frames and Corners 25@25&10%
Stearns' Monarch Adjustable Window Screens 50%
Stearns' Gem Window Screen Frames 25&10%
Wabash Adj. Window Screen 50%
Warner's Screen Corner Irons 33⅓&10%

Freezers Ice Cream—

Qts.	2	3	4	6	8	10
Best	$1.40	1.60	1.85	2.30	3.00	3.90
Good	$1.30	1.40	1.70	2.10	2.70	3.60
Fair	$1 10	1.20	1.40	1.85	2.40	3.00

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Funnels—

Gersdorff's Perfection, Standard and Globe; 1 to 3 gro., 10&5%; 3 to 5 gro., 20&5%.

Fuse—

Per 1000 feet.
Hemp Fuse $2.60
Cotton Fuse 2.90
Single Taped Fuse 3.50
Double Taped Fuse 4.70
Triple Taped Fuse 5.70

10%

Gates, Molasses—

Stearns' Molasses and Oil 30&10%
Stebbin's 80&20@85%

Gauges—

Barrett's Comb. Roller Gauge ₱ doz. $6.75@7.25
Marking, Mortise, &c. 60&10@60&10&10%
Stanley R. & L. Co.'s Butt & Rabbet Gauge 25&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire, P., S. & W. Co. 10&10%
Wire, Wheeler, Madden & Co. 10%

Gimlets—

Nail, Metal, Assorted ₱ gr. $2 30
Spike, Metal, Assorted ₱ gr. $4 00
Nail, Wood Handled, Assrt'd. ₱ gr. $4 30
Spike, Wood Handled, Assrt'd. ₱ gr. $4.90

Glue—

Le Page's Liquid, List A, 37½%; List B, 33⅓%; List C, 25%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Allerton's Axle:
1 lb Tins ₱ gr. $9.00
3 lb Tin Pails, ₱ doz., $2.00; 5 lb, $3.00; 10 lb, $6.00.
25 lb wood pails ₱ doz. $12.00
Dixon's Everlasting 10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs., ₱ doz. 1 lb $1.20; 2 lb $2.00
Lower grades, special brands, ₱ gr. $5.00@6.50

Grindstone Fixtures—

See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Peg Patent, Leather Top ₱ gr. $4 90
Peg Patent, Plain Top ₱ gr. $3.45
Sewing, Brass Ferrule ₱ gr. $1.50
Saddlers', Brass Ferrule ₱ gr. $1.35
Peg, Common ₱ gr. $1 25
Brad, Common ₱ gr. $1.35

Halters and Ties—

Covert Mfg. Co., Web and Rope 45&2%
Covert's Saddlery Works, 96 list 70%

Hammers—

Handled Hammers—

Heller's Machinists' 40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 40&10%
Peck, Stow & Wilcox 40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail 40&12½%
Engineers' and B. S. Hand 60%
Machinists' Hammers 60%
A. E. & A. E., Bell Face Nail 40&12½%
Other Nail Hammers 50%
Sargent's C. S. New List 45@50%

Heavy Hammers and Sledges—

3 ℔ and under.....₱ ℔ 45¢ } 80&10@80
3 to 5 ℔.....₱ ℔ 36¢ } &10&5%
Over 5 ℔.....₱ ℔ 30¢ }
Wilkinson's Smiths'.....9½¢@10¢ ₱ ℔

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%
Ely's Perfection.....₱ doz. $3.00

Iron, Wrought or Cast—

Barn Door, ₱ doz. $1.40.....20&5%
Bronze Iron Drop Latches.....₱ doz. 60¢
Chest, Sargent's list..50&10@50&10&10%
Door or Thumb:

Nos.	0	1	2	3	4
₱ doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10@70%
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....10%
Roggin's Latches.....₱ doz. 28¢@30¢

Wood—

Auger, assorted.....₱ gr. $2.25@$2.50
Auger, large.....₱ gr. $2.75@$3.00
File, assorted.....₱ gr. $1.25@$1.40
Brad Awl.....₱ gr. $1.75@$2.00
Apple Firmer Chisel, ass'd ₱ gr.....$2.25@2.50
Apple Firmer Chisel, large ₱ gr.2.75@3.00
Hickory Firmer Chisel, ass'd ₱ gr.....$2.25@2.50
Hickory Firmer Chisel, large ₱ gr.....$2.50@2.75
Socket Firmer Chisel, ass'd ₱ gr.1.25@1.50
Socket Framing Chisel ass'd ₱ gr2.50@2.75
Hammer, Hatchet, Axe, &c.....50&10%
Hoe, Rake and Fork.. 60&10@60&10&5%
Shovel and Spade, Wood D H'dle..60&10%
Hand Saw, Varnished, ₱ doz. 75@80¢; not Varnished.....55@60¢
Plane Handles:
Jack, ₱ doz. 23@25¢; Jack Bolted.....55@60¢
Fore, ₱ doz. 35@38¢; Fore, Bolted.....70@75¢

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch.....	3	4	5	6	8
₱ doz.....	$1.28	1.68	2.16	2.64	3.30

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch.....	3	4	5	6
₱ doz.....	$2.86	3.74	4.84	6.16

Bigelow & Dowse Co.:
Paragon, No. 1, $3.50; No. 2, $4.50; No. 3, $5.50 ₱ doz.
Chicago Spring Butt Co.:
Friction.....35@35&10%
Oscillating.....35@35&10%
Big Twin.....35@35&10%
Chisholm & Moore Mfg. Co.:
Advance.....60&10%
Cleveland.....60&10%
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Cronk Hanger Co.:
Roller Bearing.....70%
Steel Covered.....60&10%
Lane Bros.:
Parlor, Standard.....40&10%
Barn Door, Standard.....60&10%
Covered.....60&10%
Cycle, ₱ doz. $12.00.....33⅓&5%
No. 50.....60&5%
Parlor Door, New Model.....40&5%
Lawrence Bros.:
Crown.....60&10%
New York.....60&10@60&10&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Payson Mfg. Co.:
Pendulum, No. 533.....$2.49
E. C. Stearns & Co.:
Davis Parlor Door.....50@50&5%
Gem Parlor Sliding Door....50&10%
Challenge.....50@50&5%
Steel Single Track Parlor, $6....50%
Royal Parlor Door.....50%
Warner's Pat.....20&10&10%
Warner's Imp'd Single.....40&10%
Stowell Mfg. and Foundry Co.:
Badger.....60&10%
Baggage Car Door.....33⅓&5%
Climax Anti-Friction.....55&5%
Elevator.....40%
Interstate.....60&15%
Magic.....50&10%
Matchless.....60&10%
Nansen.....60&10%
Parlor Door.....50&10%
Railroad.....55&5%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....45&15%
Wild West.....50&5%
Zenith for Wood Track.....55&5%
Taylor & Boggis Foundry Co.:
Kidder's.....50@50&10%
Terry Mfg. Co.:
Ideal.....70%
Modern.....70%
Modern, Covered.....70%
Safety.....70%
Shield.....70%
Solid.....70%
Wrought.....70%
Van Wagoner & Williams Hdw Co..
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless.....60%
Bike Roller Bearing....60&10&10%
Bike Steel Endless.....60&10&10%
C. J. Roller Bearing.....60&10&10%
Cycle Ball Bearing.....50&10%
Dye Steel.....60&10%
Economical Single Track.50&10&5%
L. T. Roller Bearing.....70%
New Era.....50&10%
New Richards.....60%
O. K. Roller Bearing.....70%
Prindle Improved.....60&10%
Richards' Improved.....60&10%
Richards' Single Track.....50&10%
Wilcox Dwarf Roller Bearing.....40&10%
Wilcox-Ives.....60&10%
Wilcox Tandem Roller Bearing.....60&10%
Wilcox Trolley Ball Bearing.....40&10%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire.....40&10%
Wood Track.....60%

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp, ₱ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Blood's, Hunt's, Plumb's, Underhill's, etc.....40&12½@50&5%
Cheaper Brands.....50&10@60%

Hay and Straw Knives—

See *Knives.*

Hinge

Blind Hinges—

Clark Mfg. Co.:
No. 1 Blind Hinge, Old Pattern, "Special".....80&10&5%
No. 1 Blind Hinge, "Diamond" (with tip).....80&10&5%
No. 1 Blind Hinge "Cottage" (with tip).....80&10&10%
Nos. 1, 3, 5 Blind Hinges, regular 1668 old Pattern.....80&10%
Nos. 1, 3, 5 Blind Hinges, "Victor" (with double tip).....80&10%
No. 50 Blind Hinge, both "Nolseless" and "Empire".....80%
No. 40—60—65 Blind.....80%
Lull & Porter Old Style Shutter.80&10%
Dixie, L. & P. Shutter.....80&10%
Buffalo Reversible Shutter.....80&10%
Mortise Gravity Blind.....50%
Huffer.....50&10&10@60%
Parker.....75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5, 11, 13..75@75&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter.....80&10%
Buffalo Gravity Locking, Nos. 1, 3 and 5.....80&10&5%
Champion Gravity Locking, No. 75.....80&10&10%
1868, Old Pat'n, Nos. 1, 3 & 5...80&10%
Tip Pattern, Nos. 1, 3 and 5..80&10&5%
Double Locking, Nos. 20 and 25....75%
Empire, Nos. 101 and 103.....80%
Niagara Gravity Locking, Nos. 1, 3 and 5.....80&10%
Noiseless, Nos. 50, 60, 65 and 55....80%
O. S. Lull & Porter.....80&10&5%
Pioneer, Nos. 060, 45 and 5½....75&5%
Steamboat Gravity Locking, No. 10.....80&10&5%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.30.....40&10%

Gate Hinges—

Reversible Self-Closing, with Latch.. ₱ doz. $1.70@1.75
Western, with Latch..₱ doz. $1.2-@1.35
New England, with Latch.. ₱ doz $1.45@1.50
Reversible Self-Closing, without Latch ₱ doz. $1.30@1.35
Western, without Latch.. ₱ doz. $0.75@0.78
New England, without Latch.. ₱ doz. $1.00@1.05

Spring Hinges—

J. Bardsley:
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....40%
Chicago Spring Butt Co.:
Chicago.....80%
Garden City Engine House.....80%
Keene's Saloon Door.....80%
Lawson Mfg. Co.:
Matchless.....95%
Matchless Provid.....40%
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50@50&5%
E. C. Stearns & Co.:
Nos 45 and 51.....70%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr.....$12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 1.....₱ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme.....30&5%
American.....30%
Columbia, No. 14.....₱ gr. $8.00
Columbia, No. 18.....₱ gr. $24.00
Crown.....30%
Gem.....30%
Knoxall.....₱ gr. $9.00
Oxford.....30%

Extra 5@10% often given.

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..75, 10&5%
Heavy Strap Hinges..80&10%
Light T Hinges.....70%
Heavy T Hinges.....75&5%
Extra Heavy T Hinges....80,5%
Extra 20@25%
Plate Hinges, Providence { 6 to 12 in. ₱ ℔ 5¢ / 14 to 36 in. ₱ ℔ 4¢
Rolled Blind Hinges, Nos. 32 and 34 50&10@50&10&5%
Rolled Plate.....70&10@70&10&5%
Screw Hook and Strap. { 6 to 12 in...₱ ℔ 2½@2¾¢ / 14 to 20 in...₱ ℔ 2¾@2¼¢ / 22 to 36 in...₱ ℔ 2 @2½¢
Screw Hook and Eye:
⅝ to 1 in. diam.....₱ ℔ 4¼@4½¢
⅝ in. diam.....₱ ℔ 5¼@5½¢
⅞ in. diam.....₱ ℔ 7¼@7½¢

Hoes—

Eye—

D. & H. Scovil.....85@85&5%
Scovil and Oval Pattern.....60@60&10%
Grub, list Feb. 23, 1899.....70&10@75%

Handled—

Often sold from 1895 or old list:
Planter's, Cotton, Field, &c..60&10&3%
Field and Garden.....60&40&5&2%
Ladies', Boys', Toy and Onion75&12½&2%
Street and Mortar.....75&15&2%
Cotton.....75&10&2½&2%
Planters'.....75&10&2½&2%
Weeding.....75&10&5&2%
Ft. Madison Crucible Garden Hoe.....75&10&2%
Ft. Madison Crescent Cultivator Hoe, per doz.....$3.75
Ft. Madison Mattock Hoe, ₱ doz....$4.00
Ft. Madison Sprouting Hoe, ₱ doz..$4.50
Ft. Madison Dixie Tobacco Hoe.....75&16⅔&2%
Kretsinger's Cut Easy, per doz.....$4.50
Warren Hoe.....60&10%

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders—Bag—

Sensible Bag and Twine.....50%

Bit—

Angular, ₱ doz. $24.00.....45&10%
Extension.
Barber's, ₱ doz. $15.00.....45&10%

File and Tool—

Nicholson File Holders and File Handles.....33⅓%

Hooks—

Cast Iron—

Bird Cage, Reading..... } 60&10&10@
Bird Cage, Sargent's List. } 70%
Clothes Line, Sargent's List.....50&10%
Ceiling, Sargent's List.....50&10%
Clothes Line, Stowell's.....70&5%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's.....70&5%
Coat and Hat, Reading 60&10@60&10&10%
Coat and Hat, Sargent's List.....50&10%
Coat and Hat, Wrightsville list..70&10%
Harness, Reading List.....70&10@75%

Wire—

Atlas, Coat and Hat.....50@50&10%
Belt.....80&10@80&20%
Buffalo Belt Fasteners.....40%
Wire Coat and Hat:
Acme.....60@60&5%
B. B.....70@70&5%
Gem.....66⅔%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, or Case, Octagon Steel.. ₱ doz. $2.00@2.15
Cotton.....₱ doz. $1.00@1.10
Picture, T. & S. Mfg. Co.....75%
Tassel, T. & S. Mfg. Co.....50&10%
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, ₱ doz. $5.00; Medium, $5.50; Heavy, $6.00
Covert Saddlery Works' Self Locking Gate and Door Hook, 4 in. ₱ gross $18.00; 6 in. $17.20.....70%
Crown Picture.....60%
Fish Hooks, American.....60@60&10%
Grass, No. 2, $1.65; No. 3, $1.80; No. 4.....$2.00
Potato and Manure.....75&15%
Hooks and Eyes—Brass.....70&10@75%
Hooks and Eyes—Malleable Iron..75&10%
Whiffletree, ₱ ℔.....4½¢
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....₱ ft. 4@4½¢
3-ply Standard.....₱ ft. 5½¢
4-ply Standard.....₱ ft. 6½¢
3-ply extra.....₱ ft. 6½¢
4-ply extra.....₱ ft. 7½¢
High Grade.....₱ ft. 8½@9½¢
Cotton Garden, ¾ in., coupled:
Fair quality.....₱ ft. 7¢
Good quality.....₱ ft 8¢

Irons—

Sad—

From 4 to 10.....₱ ℔ 2@2½¢
B. B. Sad Irons.....₱ ℔ 2½@2¾¢
Chinese Laundry.....₱ ℔ 3½@4¢
Chinese Sad.....3@3½¢
Crown Improved, Pol., ₱ doz. $6.50; Nickel, $7.00
Troy Pol. Irons.....₱ doz. $3.00
Mrs. Potts', per set:

No.	50	55	60	65
	61@64¢	57@60¢	71@74¢	67@70¢

New England Pressing.....₱ ℔ 2½@3¢
Sensible Sad Irons, Pol., ₱ doz. $6.50; Nickel, $7.00.

Soldering—

Soldering Coppers.....₱ ℔ 21@25¢
Covert Mfg. Co.....35&2%

Pinking—

Pinking Irons.....₱ doz. 55@60¢

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel.....45&2%
Daisy, ₱ doz. $12.00.....70%
Lockport.....40@40&10%
Victor, ₱ doz. $20.00.....70%
Lane's Steel.....30%

Kettles—

Brass, Spun, Plain, list Jan. 10, '99.15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Dick's Butcher Knives.....40%
Foster Bros.' Butcher, &c.....40%
Nichols' Butcher Knives.....50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₱ doz.....$3.25

Drawing—

Standard list.....75&10@80%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Douglass.....75@75&10%
Watrous.....30&10@40%
L. & I. J. White.....20&5@25%
Cautelo's Folding.....50@50&5%

Hay and Straw—

Blizzard.....$5.50@6.00
Iwan's Sickle Edge.....₱ doz. $10.50
Lightning, from Jobbers.....$5.00@6.00

Mincing—

Buffalo Adjustable, ₱ doz. $3.00.....40%
Knapp & Cowles.....60%
Smith's, ₱ doz., Single, $2; Double, $3 45@50%
Sensible, Nos. 10, 20, 40 and 60.....

Miscellaneous—

Farriers'.....₱ doz. $2.00@3.00

Knobs—

Base, 2¼-in., Birch, Rubber tip, ₱ gro. $1.25@1.40
Bardsley's Wood Door, Shutter, &c...15%
Carriage, Jap., ₱ gr. 80¢.....60&10%
Door, Mineral.....₱ doz. 60@62¢
Door, Por. Jap'd.....₱ doz. 65@67¢
Door, Por. Nickel.....₱ doz. $1.70@1.80
Drawer, Porcelain....60&10@60&10&10%
Picture, Sargent's.....70&10%
Shutter, Porcelain.....70@70&10%
Yale & Towne Wood, list Dec., '85....40%

Ladles—Melting—

P., S. & W.....35&10@40¢
Reading.....50&10%
Sargent's.....60@60&10%

Lanterns—Tubular—

	₱ doz.	
Regular Tubular	$7.00	40&5@40&
Side Lift Tubular	$7.50	10&5%
Square Lift Tubular	$7.50	

Bull's Eye Police—

2¼-inch flash light.....₱ doz. $4.00
3-inch flash light.....₱ doz. $4.50
2¾-inch regular.....₱ doz. $3.60
3-inch regular.....₱ doz. $3.90

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Covert Mfg. Co.....45&2%
Peck, Stow & W. Co.....60&5%
Sargent's.....70&10@70&10&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Excelsior.....60@60&10%
Payson's:
Solid Grip Nos. 303 and 304, ₱ 100.....$11.00
Other sizes.....70&10%
Shaw's.....60@60&10%

Lines—

Ossawan Mills.
Crown Solid Braided Chalk.....33⅓%
Mason's, No. 0 to No. 5.....33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr.....30%

Wire Clothes...	Nos.	18	19	20
100 feet		$2.40	2.15	1.90
75 feet				$1.35

Locks, &c.—Cabinet—

Cabinet Locks.....33⅓&2%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Plate.....33⅓%
Reading.....60@60&10%
R. & E. Mfg. Co.....60&10@60&10%
Sargent & Co.....60&10@60&10&10%
S. B. & Co., Locks, Knobs, &c.40@40&5%

Elevator—

Stowell's.....33⅓%

Padlocks—

Wrought Iron, list Dec. 3, '97.75&10@80%
Dog Collar, S. B. Co.....40%
E. T. Fralm:
Cast Iron, Scandinavian.....90&40%
Mal. Iron, 120 line.....90&10%
Mal. Iron, 110 and 125 line.....65%
All others.....50&5%
Scandinavian.....90&40@90&40&10%
S. B. & Co.....40%

Sash, &c.—

Fitch's Patent.....65&10%
Ives' Patent.....65@65&10%
Payson's Perfect.....70%
Payson's Signal.....70&10%
Reading.....60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Boss, Carpenters'.	$3.50	
Boss, Ship Bldrs'..	3.75	
Douglas..	2.50	$3.00
Jennings'..	2.50	3.00
Millers' Falls..	....	5.75
Snell's, Rice's Pat.	2.50	2.75

Fluting—

Crown Jewel, 6 in.....$2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.20%
Maris & Beckley (Teal Patent).....80%
See also *Blocks.*

Washing—

Wayne American, No. 2, ₱ doz. $27.50
Western Star, No. 2, ₱ doz.. 27.50
Western Star, No. 3, ₱ doz.. 30.00
St. Louis, No. 41, ₱ doz.. 68.00
Carload lots 10% off, freight allowed.

Mallets—

Hickory.....50@50&10%
Lignumvitæ.....50@50&10%
Tinners', Hickory and Applewood.....
₱ doz....55@60¢
Fiber Head, Stearns'.....25%

Mattocks—

List Feb. 23, 1899.....70&10@75%

Measures—

Peck and Half Peck, See *Ware, Stand- and Fiber.*

Meat Cutters—

See *Cutters, Meat.*

Menders—

Centaur Harness Menders, ₱ doz. $6.00.....20%
Jones' Hose Menders, ₱ doz., ½ in., 40¢; ¾ in., 50¢; 1 in., 85¢.....50%
Victor Complete Hose Menders, ₱ doz. $3.50.....25%

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, List, Jan. 1, '88.....
60&10@60&10&10%
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93..30%
National, list Jan. 1, '94.....30%
Parker's Columbia and Victor....60&10%
Parker's Upright.....30&10@40%
Swift, Lane Bros.....33⅓%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are very frequently quoted

	10	12	14	16-inch
Cheap..	$1.65	$1.70	$1.75	$1.80
Medium..	2.50	2.75	3.00	3.25
High Grade..	3.50	3.75	4.00	4.25

Pennsylvania and Continental.....
60&10&10%
Philadelphia:
All Styles except A and E.....70&10%
Style A, all Steel.....60&10%
Style E, Low Wheel.....60&10%
Style E, High Wheel.....50&10%
Racine.....60&10&10%

Muzzles—

Safety.....₱ gr. $12.00@$12.50

Nails—

Cut and Wire. See *Trade Report.*
Wire Nails and Brads, Papered. List, May 1, '92.....See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10
A. C..	25¢	23¢	22¢	21¢	21¢

40&10&5%

American.. 9½ 9½ 9½ 9½ 9½ ...net
Ausable.. 28¢ 26¢ 25¢ 24¢ 23¢
40&10&10%
Capewell.. 19¢ 18¢ 17¢ 16¢ 16¢10&5%
C. B. K.. 25¢ 23¢ 22¢ 21¢ 21¢...40%
Champlain... 28¢ 26¢ 25¢ 24¢ 23¢
40&5&2%
Clinton Fin... 19¢ 17¢ 16¢ 15¢ 14¢30&5%
Maud S.. 25¢ 23¢ 22¢ 21¢ 21¢
50&10&5%
Neponset.. 23¢ 21¢ 20¢ 19¢ 18¢...40%
Putnam.. 23¢ 21¢ 20¢ 19¢ 18¢.33⅓%
Vulcan.. 23¢ 21¢ 20¢ 19¢ 18¢...25%

Picture—

Brass Head, Combination list.....50&10%
Brass Head, Sargent's list.....
70&10@70&10&5%
Porcelain Head, Combination list.40&10%
Porcelain Head, Sargent's list....50&10%
Crown.....50&10%
Niles' Patent.....40%

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

Cold Punched. Mfrs. or U. S. Standard.	Off list.
Hexagon, plain..	$6.20
Square, plain..	5.90
Square, C. T. & R..	6.00
Hexagon, C. T. & R..	6.70
Hot Pressed. Mfrs., U. S. or Nar. Gauge Standard.	
Square..	$6.20
Hexagon..	6.90

Oakum—

Best or Government.....₱ lb 5¾¢
Navy.....₱ lb 4¾¢
U. S. Navy.....₱ lb 5¼¢
Plumbers' Spun Navy.....23¼¢
F. o. b New York. In carload lots ¼¢ ₱ lb off.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50&10@60%
Zinc and Tin.....75@75&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
Wilmot & Hobbs Mfg. Co.....70&10@75%

Openers, Can—

French.....₱ doz. 35¢
Iron Handle.....₱ doz. 60@75¢
Klondike, Rogers & Bros..₱ gro $6 50
National, ₱ gro.....$1.75@$2.00
Sardine Scissors.....₱ doz. $2.00@$2.10
Sprague, Iron or Wood Handles.....
₱ doz. 40@45¢
Stowell's.....75&10%
Streeter's:
Sensible, Japanned.....₱ gr. $3.50
Sensible, Nickel.....₱ gr. $5.50
Surprise.....₱ gr. $2.00
New Sprague, Metallic H'dle ₱ gr. $3.50
New Sprague, Wood H'dle..₱ gr. $4.50

Packing—

Rubber—

Standard, fair quality.....70&10@75%
Inferior quality.....75&10@80%
Extra.....60&5@60&10&5%
Jenkins' Standard, ₱ lb 80¢....25@25&5%

Miscellaneous—

American Packing.....9¢@10¢ ₱ lb
Cotton Packing.....13¢@14¢ ₱ lb
Italian Packing.....10½¢@11½¢ ₱ lb
Jute.....5¢@5½¢ ₱ lb
Russia Packing.....12¢@13¢ ₱ lb

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $5.25; No. 2, $5.50 ₱ doz.....15%

Galvanized—

Inch.....	10	12	14
Water, Standard, ₱ gro..	$16.50	$18.50	$20.50
Water, Competition, ₱ gro..	$14.00	$16 00	$18 00
Fire, ₱ gro..	$19 00	$22.50	$25.50
Well, ₱ gro..	$21.00	$22.00	$25.00

Pans—

Dripping—

Large Sizes.....₱ lb 4 @4½¢
Small sizes.....₱ lb 4½@4¾¢

Fry—

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Acme Fry Pans.....75@75&10%

Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, ₱ doz., $10; 10, $11.50; 20, $13; 30, $15....60%
Simplex No. 08, ₱ doz. $7.00; No. 09, $8.50.....60%

Paper—

Building Paper—

	Per roll 500 sq. ft.
Rosin Sized Sheathing:	
Light wt., 20 sq. ft. to lb..	$0.35@0.40
Medium wt., 12 sq. ft. to lb.	$0.55@0.60
Heavy wt., extra quality..	$0.95@1.05
Barrett's Water Proof Sheathing..	$1.35@1.75
Medium Grades Water Proof Sheathing..	$0.80 to 1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ₱ ton..	$42.50

Tarred Paper.

1 ply (roll 300 sq. ft.), ₱ ton.. $35@37
2 ply, heavy, ₱ roll 100 sq. ft.. 90¢
2 ply, light, ₱ roll 100 sq. ft.. 75¢
3 ply, heavy, ₱ roll 100 sq. ft.. $1.20
3 ply, light, ₱ roll 100 sq. ft.. $1.00

Sand and Emery—

List April 19, 1886.....50&10&5@60%

Parers—

Apple—

Advance..	₱ doz.	$4.50
Baldwin..	₱ doz.	$5.00
Bonanza..	each	$5.00
Dandy..	each	$7.50
Eureka, 1888..	each	$16.00
Family Bay State..	₱ doz.	$12.00
Hudson's Little Star..	₱ doz.	$4.00
Hudson's Peerless..	₱ doz.	$5.50
Improved Bay State ₱ doz.		$27.00@30.00
New Lightning..	₱ doz.	$5.50
Penn..	₱ doz.	$4.75
Perfection..	₱ doz.	$4.00
Reading 72..	₱ doz.	$4.00
Reading 78..	₱ doz.	$7.00
Turn Table..	₱ doz.	$4.50
White Mountain..	₱ doz.	$4.00

Potato—

Saratoga.....₱ doz. $5.50
White Mountain.....₱ doz. $4.50

Paris Green—

Arsenic kegs or casks.....₱ lb 12 ¢
Kegs of 100 to 175 pounds.....₱ lb 12½¢
Kits of 14, 28 and 56 pounds..₱ lb 13½¢
Paper boxes 2 to 5 pounds.....₱ lb 13½¢
Paper boxes 1 pound.....₱ lb 14 ¢
Paper boxes ½ pound.....₱ lb 15 ¢
Paper boxes ¼ pound.....₱ lb 16 ¢

Picks and Mattocks—

List Feb. 23, 1899.....70&10@75%

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

13/4-inch.....₱ gro. $4.50@$5.00
2-inch.....₱ gro. $5.00@$5.50

Escutcheon—

Brass.....60@60&5%
Iron, list Nov. 11, '85.....60@60&5%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard.....75&5@75&10%
Extra Heavy.....75&10&5@80%
Fittings.....80@80&5%

Pipe, Wrought—

Factory Shipments.

List February, 1899.
Plain and Galvanized.....60&5 tens &5%
Screw and Socket Casing.....52½&10%
Inserted Joint Casing.....52½%
Cold Drawn Seamless Steel Tubing..60%

Planes and Plane Irons—

Wood Planes—

Molding.....45@45&5%
Bench, First quality.....50&5@50&10%
Bench, Second quality.....50&10&5@60%
Bailey's (Stanley R. & L. Co.)
50&10&10@50&10&10&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.)
50&10&10@50&10&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10&10@25&10&10&10%
Sargent's.....60&10&10@70%

Plane Irons—

Standard List.....30&10@30&10&10%
Auburn Thistle.....30&10@30&10&10%
Buck Bros.....30%
Butcher's.....$5.00@5.25 to £
Stanley R. & L. Co...50&10@50&10&10%
L. & I. J. White.....20&5@25%

Plates—

Felloe.....₱ lb 6¢@6½¢
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—

Acme Nippers.....50%
Bernard's:
Parallel Pliers, &c.....33⅓%
Paragon Pliers.....50%
Lodi Pliers.....50%
Elm City Peace Pliers.....35%
Button's.....70&10@70&10&5%
Cronk's Patent Pliers.....80%
Cronk's Stubb's Pat. Pliers.....50&10%
Cronk's Button Pattern.....70
Cronk's Combo. Cutting and Gas Pliers, ₱ doz. $20.00, 60%
Gas Pliers. ₱ doz.:

	7-in.	8-in.	9-in.	10-in.
Best..	$5.25	$6.00	$6.00	$6.50
Good..	$2.50	2.75	3.00	3.50

Heller's Farriers' Pincers and Tools.....
40@40&5%
Morrill's Parallel, ₱ doz. $12.00...30&5%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Utica Drop Forge & Tool Co.:
Combination Pliers.....40&5%
Side Cutting Pliers.....40&5%
Hall Patent Nipper.....40&5%
Round and Flat Nose Pliers.....40&5%
End Cutting Pliers.....40&5%
Royal Blue.....40&5%
Glass Pliers.....40&5%
Burner Pliers.....40&5%

Plumbs and Levels—

Plumbs and Levels.....
70&10&10@70&10&10&10%
Cook's.....40&10&10@40&10&10&5%
Disston's.....70%
Pocket Levels.....70&10&10@75&10%
Stanley R. & L. Co.....
70&10&10@70&10&10&10%
Stanley's Duplex.....25&10@25&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $4.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1 lb papers.....₱ lb 11½¢
½-lb papers.....₱ lb 12 ¢
¼-lb papers.....₱ lb 12½¢

Pokes, Animal—

Bishop's American.....₱ doz. $2.75
Bishop's I. X. L.....₱ doz. $5.50
Bishop's Steel Monarch.....₱ doz. $4.25
Bishop's Pioneer.....₱ doz. $3.25
Ft. Madison Hawkeye.....₱ doz. $3.00
Ft. Madison, Western.....₱ doz. $3.50
Ironclad, Sunbury, with strap, ₱ doz. $4.25
Ironclad, Sunbury, with snap, ₱ doz. $4.00
Metallic Horse Poke.....₱ doz. $5.00

Police Goods—

Bean's.....25%
Tower's.....25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $1.50

Stove—

Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Wynn's Black Silk, 5 lb pail.....₱ lb 12¢
Wynn's Black Silk, ½ lb box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₱ doz. $1.00

Poppers, Corn—

Round or Square.
1 qt.....₱ doz. 60¢; ₱ gr. $6.00
1½ qt.....₱ doz. 70¢; ₱ gr. 7.50
2 qt.....₱ doz. $1.10; ₱ gr. 11.50
Quincy Corn Popper, 1 qt., ₱ gr. $17.00; 2 qt., $22.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled.....40&10&5@50%
Tinned.....40&5@40&10%

Powder—

In Canisters:
Duck, 1 lb each.....45¢
Fine Sporting, 1 lb each.....75¢
Rifle, ½ lb each.....15¢
Rifle, 1 lb each.....25¢
In Kegs:
Duck, 6¼-lb kegs.....$2.25
Duck, 12½-lb kegs.....$4.25
Duck, 25-lb kegs.....$8.00
Rifle, 6¼-lb kegs.....$1.25
Rifle, 12½-lb kegs.....$2.25
Rifle, 25-lb kegs.....$4.00
King's Smokeless. 25&10&2½%
Keg (25 lb bulk).....$20 00
Half Keg (12½ lb bulk).....$10.25
Quarter Keg (6¼ lb bulk).....$5.25
Canister (1lb bulk).....$0.90
Case, 1 lb Canisters (50 lb bulk).....$45.00
Half Case, 1 lb Canisters (25 lb bulk).....$22.75
King's Semi-Smokeless: 20&2½%
Keg (25 lb bulk).....$1C.00
Half Keg (12½ lb bulk).....$5.25
Quarter Keg (6¼ lb bulk).....$2.75
One Pound Can, bulk.....$0.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25@30%

Pruning Hooks and Shears—See *Shears.*

Pullers Nail-

Crown, ₱ doz. $18.00.....50%
Crown Prince, ₱ doz. $15.00.....50%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%
National, ₱ doz. $24.00.....40%

Pelican, ₱ doz. $9.00.....15&10%
Scranton, No. 1 and 2, ₱ doz.. ...$10.00
Scranton, No. 3, ₱ doz.....$9.50

Pulleys—

Hay Fork, Swivel or Solid Eye.....
₱ doz. $1.50
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00..... 40%
Hay Fork, Stearns' No.15 & 25₱doz.$1.75
Hay Fork, Stearns' No.35 & 45₱doz.$2.00
Hay Fork, Stearns' Nos. 56 & 66. ...$2.25
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....70&10&10%
Japanned Screw.....70&10&10%
Japanned Slide.....70&10&10%
Stowell'sCeiling or End,Anti-Friction 40%
Stowell's Dumb Waiter,Anti-Friction 50%
Stowell's Electric Light..... ....33⅓%
Stowell's Side, Anti-Friction.....50%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₱ doz., 18¢; 2 in., 20¢.
Empire.....1¾ in., 17¢; 2 in., 19¢
L. C.....1¾ in., 15¢; 2 in., 17¢
Ideal No. 13.....1¾ in., ₱ doz., 15¢
Improved.....1¾ in., 17¢; 2 in., 19¢
Niagara.....1¾ in., 16¢; 2 in., 17¢
No. 26, Troy.....1¾ in., 15¢; 2 in., 17¢
Star.....1¾ in., 16¢; 2 in., 17¢
Acme.....1¾ in., 18¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern, Best Makers.....65&10@70%
Pitcher Spout, Best Makers..75@75&10%
Pitcher Spout, Cheaper Goods.....
75&10@80%
Flint & Wallings Fast Mail.....60%
Myer's Pumps, low list 55%
Pump Leathers, all sizes.....₱ gr. $6.00
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Springfield Socket..65%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Revolving.....₱ doz. $3.50@3 75
Saddlers' or Drive, good...₱ doz.60@65%
Spring, good quality..₱ doz. $1.70@1.80
Spring, Leach's Pat.....15%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co....20&2%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door. Light....	In.	½	⅝	¾
₱ 100 feet.....		$1.30	1.95	2.60

B. D., for N. E. Hangers:

	Small.	Med.	Large.
₱ 100 feet.....	$1.60	2.00	2.50

Cronk's Double Braced Steel Rail, ₱ foot.....3¢
Lanes' O. N. T., ₱ 100 ft.....$2.40
Lanes' Standard, ₱ ft.....3¼¢
McKinney's None Better.....₱ ft. 2¾¢
McKinney's Standard.....₱ ft. 3¼¢
Moore's, Wr't. Bracket, Steel.....$2.40
Sliding Door, Bronzed Wr't Iron.₱ ft. 6½¢
Sliding Door, Iron Painted.....₱ ft. 2¢
Sliding Door, Wr't Brass, 1½in.₱ ℔ 36¢
.....50%
Stowell's Steel Rail.....85&10%
Terry's Steel Rail .....₱ ft. 3¼¢

Rakes—

1895 or old list often used:
C. S. Rakes.....60&10&3%
Malleable Rakes.....70&10&3%
Cast Steel, Asso. List.....75&5&2%
Malleable.....70&10%
Buffalo Lawn and Garden..₱ doz..$3.50
Fort Madison Red Head Lawn.....$3.00
Fort Madison Blue Head Lawn.....$2.65

Rasps, Horse—

D aston's 75%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Clothes Line—

Stearns'.....33⅓&10%

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N,2904P and PN,002904PN,0924 and 0924N, 5009N and PN.....40&10%

Registers—

For points on Mississippi river and East:
Black Japanned..... 50%
White Japanned 0%
Bronzed Finishes..... 40%
Nickel Plated..... 5 %
Electro Plated in Brass, &c.....40%
White Porcelain..... 30%
Solid Brass and Bronze Metal.....25%
Note.—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

Peck, Stow & W. Co.'s.....60@60&10%
Sargent's.....80@80&10%

Hog Rings and Ringers—

Blair's Rings.....₱ gro. $3.75@4.00
Blair's Ringers..... ₱ doz. 55¢@60¢
Brown's Rings..... ₱ gro. $3.75@4.00
Brown's Ringers..... ₱ doz 55¢@60¢
Hill's Rings.....₱ gr. boxes, $3.25@3.50
Hill's Ringers, G. L..... ₱ doz. 50@55¢
Perfect Rings.....₱ gro. $7.00@7.50
Perfect Ringers, ₱ doz.....75@80¢

Rivets and Burrs—

Copper.....40&10@50%
Norway Quality or Soft Steel:
Tinners'.....70@70&10%
Miscellaneous.....70@70&10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—

Stair, Black Walnut .....₱ doz. 40¢
Stair, Brass, Oval or Hollow..50@50&10%

Rollers—

Acme Stowell's Anti-Friction .... 50&10%
Barn Door, Sargent's list..60&10&10@70%
Lane's, Stay .....33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.00

Rope—

The following prices are f.o.b. New York or factory; terms, 1½% for cash.
Manila, 7-16 inch and larger.....₱ ℔ ..@ 9½¢
Manila.....⅜ inch. ₱ ℔ ..@10 ¢
Manila.....¼ and 5-16 inch. ₱ ℔ ..@10½¢
Manila, Tarred Rope,15 thread .....₱ ℔ ..@ 9½¢
Manila Hay Rope Medium.₱ ℔ ..@ 9½¢
Sisal... 7-16 in. and larger. ₱ ℔ ..@ 8½¢
Sisal.....⅜-inch.. ₱ ℔ ..@ 9 ¢
Sisal.....¼ and 5-16 in.. ₱ ℔ ..@ 9½¢
Sisal, HayRope,2 to 10 ply. ₱ ℔ ..@ 8½¢
Sisal, Medium Lath Yarn.. ₱ ℔ ..@ 8 ¢
Cotton Rope:
Best, ¼ in. and larger.....₱ ℔ 13@14¢
Medium, ¼ in. and larger..₱ ℔ 10@12¢
Common, ¼ in. and larger...₱ ℔ 8@10¢
Jute Rope.....₱ ℔ 5½@6¢

Wire Rope—

List Sept. 1, '94. All kinds. 20&2½&2 cash

Ropes, Hammock -

Covert Saddlery Works.....70%

Rules—

Boxwood.. 75&10&10&10@75&10&10&
10&10&10%
Ivory.... .40&10&10@40&10&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber .....50&10%
Stanley R. & L. Co.:
Boxwood.....
75&10&10@75&10&10&10&10%
Ivory..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—

Note.—Extra 5@10% often given.
Atkins' Circular.....50%
Atkins' Band 50%
Atkins' Cross Cuts 40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw.....40&10%
Atkins' Wood Saws.....40&10%
Atkins' Hand, Compass, &c.....40%
Disston Circular Solid and Inserted Tooth.....50%
Disston Band 2 to 14 in. wide.....60%
Disston Band ¼ to 1¾.....70%
Disston Crosscuts.....50%
Disston Narrow Crosscuts.....55%
Disston Mulay, Mill and Drag.....50%
Disston Framed Woodsaws.....35%
Disston Woodsaw Blades.....40%
Disston Woodsaw Rods.....25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120 76, 77, 8.....25%
Disston Hand Saws, Nos 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Disston Compass Keyhole, &c.....25%
Disston Butcher Saws and Blades.....5%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill.....45&10%
Peace Cross Cuts, list Jan.1,'93,45&10&5%
Peace Hand, Panel and Rip.....25&10&5%
Richardson's Circular and Mill...45&10%
Richardson's X Cuts, list Jan. 1, '93, 45&10&5%
Richardson's Hand, &c..... 25&10&5%
Simonds' Circular Saws.....45@50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%
Wheeler, Madden & Clemson Mfg. Co.: Cross Cuts, list Jan. 1, '93...45&10&5% Hand, Panel and Rip.... .30&10&10%
Woodrough & McParlin: Cross Cuts, list Jan. 1, '93..45&10&10% Hand, Panel and Rip.....25&10&10%

Hack Saws—

Disston Concave Blades.....25%
Disston Keystone.....30%
Disston Hack Saw Frames.....30%
Griffin's complete.....50@50&5%
Griffin's Hack Saw Blades.....50@50&5%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Velocipede Scroll Saw, $18...20%
Barnes' Scroll Saw Blades.....40%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scale Beams—See *Beams, Scale.*

Scales—

Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Family, Turnbull's .....30@30&10%
Hatch, Counter, No. 171, good quality, ₱ doz. $17.00@18.00
Hatch, Tea, No. 161....₱ doz. $5.75@6.00
Pelouse Scales — Family, Candy, Grocers and Postal.....33⅓%
Union Platform, Plain.....$2.00@2.10
Union Platform, Striped.....$2.15@2.25
"The Standard" Portables.....45@50%
"The Standard" R. R. and Wagon. ..60%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $8.00.....40&10%
Box, 1 Handle.....₱ doz. $2.00
Box, 2 Handle.....₱ doz. $3.00@4.00
Foot, W. E. Pratt Mfg. Co., ₱ doz. $1.00 @$1.15
Ship, No. 1, ₱ doz., $3.50; No. 2, $2.25 @$2.40
Ship, R. I. Tool Co.....10%
Tatum's Box .....25&10%

Screen Window and Door Frames—See *Frames.*

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron.....₱ doz., 1 in., $2.50; 1¼, $2.75; 1¼, $3.25
Bench, Wood, Beech ..₱ doz. $2.00@2.20
Hand, Wood..... ....30&10@40&10%
Hand, Grand Rapids..... .....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95... 80&20%
Coach and Lag, Gimlet Point, list Jan. 30, '95.....80&15%
Hand Rail, list Jan. 1, 1881..... 82½&2%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40@40&10%
Sargent.....70&10&10%
Stearns' .....40&10%
Tatum's.....25&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.....60%
Flat or Round Head, Brass.....50%

Set and Cap—

Set (Iron or Steel).....75@75&10%
Sq. Hd. Cap.....70@70&10%
Hex. Hd. Cap..... .....70@70&10%

Wood—

Manufacturers' Circular Prices, March 22, '99.
List Nov. 10, 1898.
Flat Head, Iron.....85%
Round Head, Iron.....82½%
Flat Head, Brass.....80&10%
Round Head, Brass.....75&10%
Flat Head, Bronze.....75&10%
Round Head, Bronze.....75%
Rogers' Drive Screws.....87½%
Note —An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass and Grain.....50&10%

Scythe Snaths—See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise.....25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls, ₱ doz.....$2.00
Wood Hdle., 14 Awls, 6 Tools, ₱ doz. $2.25@2.40
Alken's Sets, Awls and Tools:
No. 20, ₱ doz. $10.00.60&10@60&10&5%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Round, assorted.....₱ gr. $3.00@3.25
Octagon.....₱ gr. $4.00@4.75
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....66⅔%

Rivet—

Regular list.....70@70&10%

Saw—

Alken's Genuine.....₱ doz. $4.50@5.00
Alken's Imitation .....₱ doz. $3.00@3.10
Atkin's Criterion.....₱ doz. $6.00
Atkin's Adjustable.....₱ doz. $6.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30&5%
Disston's Star and Mo arch.....25%
Hammer, Bemis & Call Co.'s new Pat.45%
Hammer, Seymour, Smith & Son, ₱ doz. $4.75
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00.40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Stillman.....₱ doz. $1.00
Taintor Positive, ₱ doz. $18.....60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron .....₱ doz..$0.95@1.00
Wood.....₱ doz..$2.25@2.50
Bailey's (Stanley R. & L. Co.).....50&10%
Cincinnati.....25&10%
Goodell's, ₱ doz. $9.00.....15&10%
Stearns'.....40&10%
Tatum's.....25&10%

Shears—

Cast Iron, good quality, ₱ gross, 7-in., $14; 8-in., $16; 9-in., $18.
Cast Iron, cheaper grade, ₱ gross, 7-in., $8.50; 8-in., $9; 9-in., $11.50.
Acme Cast Shears.....40@40&5%
Straight Trimmers, &c.
Good quality..... 70&10@75&10%
Second quality.....80&10@85%
Davenport Cutlery Co.....60@60&10%
Heinisch's Tailors' Shears.....40@40&5%
Seymour's, list Dec. '81.
60&10&10@70&5%
Seymour's Nickel.....50&10@60&5%
Seymour's Tailors Shears.....40@40&5%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....15%

Tinners' Snips—

Forged Handles, Steel Blades.....20&10%
Malleable Handles, Laid with Steel...40%
Forged Handles, steel Blades, Berlin.. 40&10%
Niagara Snips.....40%
Seymour's..... .....60&10&10@70&5%

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
Eagle Pruning Shears.....60%
John T. Henry Mfg. Company:
Henry's Genuine, Nos. 1, 2 and 22 .....50&10%
Henry Pattern, No. 20.....50&25%
Henry's Pattern, No. 21.....50&30%
Conn. Pattern, Nos. 32, 33 and 3.50&25%
Conn. Pattern, No. 4.....50&20%
Henry's Orange Shears.....50&30%
Henry's Grape Shears..... ....50&20%
Henry's Tree Pruners.....75%
Levin Pruner, No. 23, $9.00 ₱ doz. ..45%
Levin Pruner, No. 24, $12.00 ₱ doz ..45%
No. 100 Pruning Shear.....60&10%
P., S. & W. Co.....60%
Seymour's.....60&10&10@70&5%

Seymour Smith & Son:
Rockdale.....20%
New Standard Tree Pruner. ....80&5%
Others.....05%
Telegraph Tree Pruner.....70&5%
Waters' Tree Pruner .....40&5%
Wheeler, M. & C. Co., Combination, ₱ doz. $12.00..... ....25&10@25&10&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller.....60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading..... .....70&10@75%
R. & E..... .....60&10@60&10&5%
Wrightsville, Hatfield Pattern....80&10%

Sliding Shutter—

Reading list.....70&10@75%
R. & E.....60@60&10%
Sargent's list.....60@60&10%

Shells—

Brass Shot Shells, Club, Rival, Climax, 65&2%
Brass Shot Shells, first quality.....60&2%
First quality 4, 8, 10 and 12 gauge, 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (₱7.50 list).....20&10&2%
Quick Shot,Reinforced New Victor40&2%
Smokeless brand, 12, 10, 16 gauge ..... 33⅓&10&2%
Star, Club, Rival and Climax Brands . 33⅓&10&2%
Trap brand 12 and 10 gauge.33⅓&10&2%

Shells, Loaded—

Loaded with Black Powder..... 40&5@40&10%
Loaded with Nitro Powder..... 40&10&10&5@40&10&10&10%

Ship Tools—

L. & I. J. White 25%

Shoes, Horse, Mule, &c.—

Burden's, Perkins', Phœnix, Old Dominion Bryden's Boss Crescent, &c., from jobbers.....$3.10@3.25
Bryden's Frog Pressure.....$4.00
Gibbs' Rubber Cushioned....₱ set, $1.50

Shot—

Drop, up to B 25-℔ bag.....$1.40@1.45
Drop, up to B, 5-℔ bag 30
Drop, B and larger, 25-℔ bag.$1.65@1.70
Drop, B and larger, 5-℔ bag.....35
Buck 25-℔ bag.....$1.65@1.70
Buck, 5-℔ bag.....35
Chilled, 25-℔ bag.....$1.68@1.73
Dust Shot, 25-℔ bag..... 2.00
Dust Shot, 5-℔ bag..... .. .50

These prices are often shaded 5@10¢ ₱ 25 ℔ bag, especially in the West, and with the rapid advances which have taken place mer hants are often in a position to undersell the manufacturers.

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point. D or L Handle:

	Price ₱ doz. A1, 1st Grade.	A2, 2d Grade.
Plain Back.....	$8.85@9.15	$7.95@8.25
Strap Back.....	8.25@8 55	7.35@7 65
Cleveland Pat'rn	8.55@8.85	7.65@7 95

	C3, 3d Grade.	D4, 4th Grade.
Plain Back.....	$7.05@7.35	$6 45@6 75
Strap Back.....	6.45@6 75	5.85@6.15
Cleveland Pat'rn	6 75@7.05	6.15@6.45

All other sizes add 30¢ ₱ doz.
Black deduct 30¢ ₱ doz.
These prices are often shaded by jobbers.

Shovels and Tongs—

Brass Head.....60&10@60&10&10%
Iron Head.....60&10@60&10&5%

Sieves and Sifters—

Buffalo Metallic, S. S & Co., ₱ gr.:

	16	16&18	18	18&20
Blued	$10.80	$11.40	$11.40	$12.00
Tinned	11.40	12.00	12.00	12.60

Eclipse.....₱ gr. $8.00@ 9.00
Hunter's Genuine....₱ gr. $10.00@10.50
Hunter's Imitation...₱ gr. $8.00@ 9.50
Shaker (Barler's Pat.) Flour Sifters... ₱ doz., $2.00.....25%

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz....	$0.70	$0.85
Mesh 20, Nested, ₱ doz....	.90	1.05
Mesh 24, Nested, ₱ doz....	1.05	1.20

Sinks—

Cast Iron—

High list.....75&5@75&10%
Low list.....60&10&10@.0%

Wrought Steel—

Columbus Galv'd and Enameled.50&10%
Columbus, Painted.....30&10%
L. & G.....50&10%

Slates—(From store).

"D" Slates.....50&10&10&10&5%
Unexcelled Notchless Slates, 60 & nine 10s.
Victor slates.....60 and eight 10s and 5%

Slaw Cutters—See *Cutters.*

Snaps Harness—

Covert Mfg. Co.:
Leroy.....45&2%
High Grade.....45&2%
Jockey.....45&2%
Trojan.....45&2%
Covert's Saddlery Works:
Banner.....75%
Crown.....70%
Triumph.....70%
W. & E. T. Fitch:
Bristol.....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&10&5%
Champion.....40&10%
Victor.....60&5%
German.....50@50&5%
Sargent's Patent Guarded.....70&10@70&10&10%

Snaths—

Scythe.....55%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp Co.'s list.75&10@80%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&25%

Silver Plated—

Flat Ware.....
Wm. Rogers Mfg. Co.....
See *Trade Report.*

Miscellaneous—

German Silver.....60&10%
C. Rogers & Bros.:
18 per cent. German Silver.....60%
18 per cent. Nickel Silver.....60%
Silver Metal.....50&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Champion (Coil).....50&10@50&10&10%
Gem (Coil).....20%
Rubber, complete.....₱ gro. $15.00
Star (Coil).....33⅓%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

Elliptic, Concord, Platform and Half Scroll, 60&10@60&10&10&10 or following net prices:

	Tempered Blk.	Brt.	Oil Tempered. Blk.	Brt.
1¼ in.	5½¢	5¾¢	6 ¢	6¼¢
1⅜ in.	5½¢	5¾¢	6 ¢	6¼¢
1½ in.	5¼¢	5½¢	5¾¢	6 ¢

Cliff's Bolster Springs.....40&2%
Cliff's Seat Springs.....₱ pair 45¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....35%

Squares—

Nickel plated.....
Steel and Iron.....
} List May 1, '95.... 75&10@80&5%
Rosewood Hdl. Try Square and T-Bevels 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter....50&10%

Squeezers—

Lemon—

Wood, Common, ₱ gr., No. 0, $5 00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined, No. 1..₱ doz. $3.25@3.50
Tinned Iron.....₱ doz. $0.80@1.25
Iron, Porcelain Lined, ₱ doz. $3.25@3.50
Hotchkiss Straight Flash....₱ doz. $9.60
Jennings' Star.....₱ doz. $1.80@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind, ⅛, ¾ and ¾ in. ₱ ℔ 5¾@6¢
Fence Staples, Galvanized
Fence Staples, Plain.....
} Same price as B'rb Wire See Trd. Rep.
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bro's.....40%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%
John Wilson's, list Sep. 1, '94.....25%

Steelyards.....40@40&10%

Stocks and Dies—

Blacksmith's:
Butterfield's Goods.....35@40%
Waterford Goods.....35@40%
Gardner.....40&10%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Reversible Ratchet.....25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ ℔...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 9 in.....80¢
Turkey Slips.....$2.00
} 33⅓@33⅓&10%
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5¼ in. $2.80
Arkansas Stone, No. 1, 5¼ to 8 in. $3.50
} 33⅓@33⅓&10%
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Cincinnati.....25&10%
Seymour Smith & Son, ₱ doz., No. 1, $3.50; No. 2, $3.20
Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%
Stearns'.....30&5%
Tatum's.....40%

Stops, Window—

Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal.....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points....₱ doz. 70@75¢
Cast Steel, Polished.....₱ doz. $2.25
Socket.....₱ doz. $1.75
Bullard's.....25&10@40%

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co., list Jan. 17, '93.... 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....25%

Tacks, Brads, &c.—

List Jan. 15, '99.

Carpet Tacks—
American Blued.....90&3⅓¼
American Tinned.....90&40%
American Cut Tacks.....90&25%
Swedes Iron Tacks.....90&33⅓%
Upholsterers' Tacks.....90&50%
Gimp Tacks.....90&50%
Lace Tacks.....85&10%
Trimmers' Tacks.....90&33⅓%
Looking Glass Tacks.....75%
Bill Posters' and Railroad Tacks.... 90&33⅓%
Hungarian Nails.....80&20%
Common and Patent Brads...75&10%
Trunk and Clout Nails:
Blued.....80&10%
Tinned.....80&10%

See *Trade Report.*

Miscellaneous—

Double Point Tacks...90&10&5@....%
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.00
Emerald, S. S. & Co.....60-gal. $3.75
Queen City S. S. & Co., 60-gal., each $4.09; 100-gal., $6.25; 120-gal., $8.50; 200-gal., $14.00; 250-gal.... $17.75
Wilson's:
No. 9.....60&10%
Aztec, Force Pump.....60&10%
Cone Top, Measuring Pump.....60%
Cabinet, Measuring Pump.....50%
Gasoline Tanks.....60&10%

Tapes, Measuring—

American Asses Skin.....40&10@50%
Patent Leather.....25@25&10%
Steel.....33⅓@40%
Chesterman's.....25@25&5%
Keuffel & Esser Co., Steel and Metallic, new list, 1898.....35%
Lufkin's Steel and Metallic.....33⅓@33⅓&5%

Thermometers—

Tin Case.....80&10%

Ties, Bale—Steel.

Standard Wire, list.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners, &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Shaves, Cincinnati Tool Co.....20%
L. & I. J. White.....20@20&5%

Saw—

Atkins' new list.....40%
Simonds'.....33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Newhouse.....50@50&10%
Oneida Pattern.....80@80&5%
Sensible.....33⅓@33⅓&10%

Mouse and Rat—

Dandy.....₱ doz. $1.75
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat.....₱ doz. $15.00
No. 3, Rat.....₱ doz. $5.85
No. 3½, Rat.....₱ doz. $4.50
No. 4, Mouse.....₱ doz. $4.30
No. 5, Mouse.....₱ doz. $3.00
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz. 6 ¢; in full cases, ₱ doz.....60¢
Hotchkiss Imp. Rat Killer...₱ gr. $12.50
Hotchkiss New Rat Killer...₱ gr. $12.50
Mouse, Wood, Choker, ₱ doz. holes.8@9¢
Mouse, Round Wire, ₱ doz. $1.50....10%
Mouse, Sensible.....33⅓%
Rat, Decoy, ₱ gr. $10.00.....10%
Rat, Sensible.....33⅓%
Schuyler's Rat Killer, No. 1, ₱ gr. $13.50; No. 2, ₱ gr. $15.00

Fly—

Balloon, Globe or Acme.....₱ doz. $1.25; ₱ gr. $13.50
Harper, Champion or Paragon.....₱ doz. $1.75; ₱ gr. $16.50

Triers—

Butter and Cheese.....25%

Trimmers, Spoke—

Bonney's No. 1, ₱ doz. $2.75; No. 2, $3.75
Cincinnati.....25&10%
Douglas', ₱ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Garden.....70%
Diston Brick and Pointing.....30%
Diston Plastering.....25%
Diston "Standard Brand" and Golden Trowels.....40%
Peace's Plastering.....25@25&5%
Rose Brick and Plastering...30@30&10%
Woodrough & McParlin, Pl st'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, ₱ doz.	$4.00	4 50	5.00

Galvernized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $6.25; No. 20, $6.75; No. 30.....$7 50

Twine—

Binder—

White S sal, 500 feet to ℔.....9¾¢
Standard 500 feet to ℔.....9¼¢
Manila, 600 feet to ℔.....10¼¢
Pure Manila, 650 feet to ℔.....10½¢

Miscellaneous—

Flax Twine—	BC.	B.
No. 9, ¼ and ½ ℔ Balls...	20¢	24¢
No. 12, ¼ and ½ ℔ Balls...	17¢	20¢
No. 18, ¼ and ½ ℔ Balls...	14¢	17¢
No. 24, ¼ and ½ ℔ Balls...	14¢	17¢
No. 36, ¼ and ½ ℔ Balls...	13¢	16¢

Chalk Line, Cotton, ½ ℔ Balls....18@20¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. Sell@
Cotton Wrapping, 5 Balls to ℔.....9@10¢
American 2-Ply Hemp, ¼ and ½ ℔ Balls.....9@10¢
American 3-Ply Hemp, 1 ℔ Balls(Spring Twine).....10@11¢
India 2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....8¢
India 3-Ply Hemp, 1 ℔ Balls.....8¢
India 3-Ply Hemp, 1½ ℔ Balls.....7@7½¢
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls.....6½¢
Mason Line Linen, ½ ℔ Balls.....45¢
No. 264 Mattress, ¼ and ½ ℔ Balls...34¢
Wool.....5@5½¢

Vises—

Solid Box.....60&10@60&10&5%

Parallel—

Bonney's.....50&5%
Fisher & Norris Double Screw.....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....20@25%
Massey's Clincher.....40@40&10%
Merrill's.....25%
Miller's Falls.....45&10%
Parker's.....20@25%
Parker's Oval Slide.....50&10%
Parker's Victor.....30%
Prentiss.....20@25%
Sargent's.....70&10@70&10&10%
Simpson's Adjustable.....40%
Stephens'.....25@30%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....50&10%
Cincinnati.....25&10%
Diston's D 3 Clamp and Guide, ₱ doz. 830.....25%
Reading.....40&10%
Stearns' Common, Nos. 0, 1, 2 & 3....50%
Stearns' Rubber Jaw, Nos. 10 & 33.33⅓%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....40%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&5%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

U. M. C. & W. R. A.—B. E., 11 up.. 60¢
U. M. C. & W. R. A.—B. E., 9 & 10.. 70¢
U. M. C. & W. R. A.—B. E., 8..... 80¢
U. M. C. & W. R. A.—B. E., 7..... 80¢
U. M. C. & W. R. A.—P. E., 11 up $1.00
U. M. C. & W. R. A.—P. E., 9 & 10..1.25
U. M. C. & W. R. A.—P. E., 8.....1.50
U. M. C. & W. R. A.—P. E., 7.....1.50
Ely's B. E., 11 and larger.....$1.70@1.75
Ely's P. E., 12 to 20.....$3.00@3.25
} Dis. 20&2½

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware—
Ground.....60&10@60&10&10%
Unground.....70&5@70&10%
White Enameled Ware—
Maslin Kettles.....75&10&5@80%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60&5%
See also *Pots, Glue.*

Enameled—

Agate and Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality.....70&10@70&10&10%
Ironclad Enameled Ware, Old list...70%
Never Break Enameled.....50&10%

Kettles—

Galvanized Tea Kettles—

Inch....	6	7	8	9
Each...	40¢	45¢	50¢	55¢

Steel Hollow Ware.

Avery Spiders & Griddles.....70@70&5%
Avery Kettles.....60@60&10%
Never Break Spiders and Griddles.....70@70&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60@60&10%
Solid Steel Ware, Enameled.....50&10%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame.$2.75
Red Star, laundry size, stationary protector.....$4.00
Double Zinc Surface:
Diamond, family size, stationary protector.....$2.75
Saginaw Globe, family size, stationary protector.....$2.50
Wilson, family size, bent frame...$2.50
Single Zinc Surface:
Nalad protector, family size, open back perforated.....$2.15
Diamond, protector family size, ventilated back.....$2.10
Saginaw Globe, protector, family size, ventilated back.....$2 00
Wilson, bent frame, family size, ventilated back.....$2 00
Eagle, protector, family size, ventilated back.....$1 85

Washers—
Leather, Axle—

Solid. . .....80&10&10@85%
Patent.....85@85&5%
Coil; ⅜ 1 1¼ 1½ Inch.
11¢ 13¢ 14¢ 17¢ ₱ 100.

Iron or Steel -

Size bolt..... 5-16 ⅜ ½ ⅝ ¾
Washers.....$4.30 3.25 2.45 2.20 2.20
In lots less than one keg add ¼¢ ₱ ℔, 5-℔ boxes add ½¢ to list.

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Weaners—
Tyler's New Hatter—No 1 ₱ doz. $8; No. 2, $3.25; No 3, $3 50; No 4. $3 75
Tyler's Safety—Nos. 1 and 2, ₱ doz. $1.50; No. 3, $1.75; No. 4, $2.00.

Weather Strips—See *Strips, Weather.*

Wedges—
Oil Finish.....₱ ℔ 2.10¢
Axe Finish.....₱ ℔ 2.45¢

Weights, Sash
Eastern: Carloads at factory. $15 00
Less than carloads at factory... $16.00
Western: Carloads at factory .....
$14 00@14.50
Less than carloads at factory.....
$15.00@15.50

Well Buckets Galvanized
See *Pails, Galvanized.*

Wheels, Well—
8-in., $2.00; 10-in., $2.50; 12-in., $2.75

Wire and Wire Goods—
Market: Nos. 0 to 18 } Market very unsettled. See *Trade Report.*
Br. & Ann. }
Cop'd. }
Galv. }
Tin'd, Tin'd list. }
Stone, Br. and Ann'd: }
Nos. 16 to 18. }
Nos. 19 to 26. }
Nos. 27 to 36. }

Annealed Wire on Spools.....
60&10@60&10&5%
Brass, list Feb. 26, '96.....20%
Copper, list Feb. 26, '96.....20%
Cast Steel Wire.....50%
Malin's Ann'd & Tin'd on Spools .60&20%
Malin's Brass & Cop. on Spools....50&10%
Steel Music Wire, 12 to 30, importe d .....
60@70¢ ₱ ℔
Stubs' Steel Wire.....$6.00 to 2, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
Iron and Brass.....90%

Wire Cloth and Netting—
Galvanized Wire Netting.....
80&10@80&10&10%
Painted Screen Cloth ₱ 100 ft. .95@1.10¢
See Trade Report.

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....80&5@80&10%
Baxter's S.....70@70&5%
Coes' Genuine.....40&10&5&5&3%
Coes' "Mechanics".....40&10&10&5&5&3%
Acme.....60@60&5%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....70@70&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Bit Wrench, Adj., Tatum's.....
₱ doz. $2.25.....25&10%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70&10%
Cincinnati Brace Wrenches.....25&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70&10@75%
Stevenson.....60&10&10%
Tatum's Brace Socket.....40%
W. & B. Machinists' Knife Hdle.....
50&10@50&10&7½%
W. & B. All Steel Pipe.....50&10@60%
W. & B. Drop Forged Engineers'.....
35@40&10%

Wrought Goods—
Staples, Hooks, &c., list March 17, '92
90@90&10%

Yokes, Neck—
Covert Saddlery Works, Trimmed.70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers' & Freighters'.. 20%

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.
Lead, Foreign white, in Oil... 8 @ 8¾
Lead, American White, in Oil:
Lots of 500 ℔ or over..... 5½@ 5¾
Lots less than 500 ℔..... @ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. @ 1½
Lead White, Dry in bbls..... @ 5
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ₱ ℔ 3¾@ 4¼
Zinc, French, S. & B. Red Seal.. @ 7½
Zinc, French, S. & B. Green Seal ..@7 7-10
Zinc, Paris, Red Seal..... @ 8¼
Zinc, Paris, Green Seal..... @ 9½
Zinc, Antwerp, Red Seal..... @ 7½
Zinc, Antwerp, Green Seal..... @ 8½
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over..... @10¼
lots less than 1 ton..... @10¾
Zinc, V.M. in Poppy Oil, Red Seal, lots of 1 ton and over..... @ 9¼
lots of less than 1 ton..... @ 9¾
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.
Black, Carbon.....₱ ℔ 5 @40
Black, Drop, Amer..... 2½@ 5
Black, Drop, Eng..... 5 @10
Black, Ivory .....10 @20
Blue, Celestial.....₱ ℔ 6 @ 8
Blue, Chinese.....30 @35
Blue, Prussian.....28 @32
Blue, Ultramarine..... 5 @30
Brown, Spanish..... ½@ 1
Brown, Vandyke, Amer..... 1½@ 2¼
Brown, Vandyke, Foreign.. 2½@ 5
Carmine, No. 40, in bulk.....$2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.35@ ..
Carmine, No. 40, in ounce bot. 3.50@3.60
Green, Chrome, ordinary..... 2 @10
Green, Chrome, pure.....18 @24
Lead, Red, bbls. and ½ bbls..... @ 5½
Lead, Red, kegs..... @ 5¾
Litharge, bbls. and ½ bbls..... @ 5½
Litharge, kegs..... @ 5¾
Ocher, French Washed ..... 1 @ 1¾
Ocher, German Washed..... 4½@ 5
Ocher, American .... ₱ ton $8.00@17.00
Orange Mineral, English.. ₱ ℔ 8¼@ 9½
Orange Mineral, French.....10½@10¾
Orange Mineral, German..... 8½@ 8¾
Orange Mineral, American .... @ 7¾
Red, Indian, English..... 4½@ 8½
Red, Indian, American ..... 2½@ 3
Red, Turkey..... 4½@ 8
Red, Tuscan..... 7 @14
Red, Venetian, Amer., ₱ 100 ℔.60 @70
Red, Venetian, English.....$1.05@2.00
Sienna, Italian, Burnt and Powdered.....₱ ℔ 4 @ 9¼
Sienna, Ital., Raw, Powd..... 2½@ 7
Sienna, American, Raw..... 1¼@ 1½
Sienna, American, Burnt and Powdered.....₱ ℔ 1¼@ 1½
Talc, French..... ....₱ 100 ℔ 90 @1.50
Talc, American .....40 @65
Terra Alba, French, ₱ 100 ℔.. 90 @1.00
Terra Alba, English..... 75 @80
Terra Alba, American No. 1....*5 @75
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3
Umber, Turkey, Raw & Powd. 2½@ 3
Umber, Bnt. Amer..... 1½@ 1¾
Umber, Raw, Amer..... 1½@ 1¾
Yellow, Chrome.....10 @25
Vermilion, American Lead..... @10
Vermilion, Quicksilver, bbls. or kegs..... @61
Vermilion, Quicksilver, bags.... @62
Vermilion, Quicks'r, sm'r pkgs... @67
Vermilion, English, Import.. .70 @75
Vermilion, Artificial..... 5 @20
Vermilion Chinese.....70 @75

Colors in Oil.
Black, Lampblack, Best..... 10 @13
Black, Lampblack, Common.. 7 @ 9
Blue, Chinese..... .....35 @40
Blue, Prussian.....25 @35
Blue, Ultramarine.....16 @20
Brown, Vandyke..... 7 @12
Green, Chrome..... 7 @11
Green, Paris.....17 @22
Sienna, Raw..... 7 @10
Sienna, Burnt..... 7 @10
Umber, Raw..... 6 @10
Umber, Burnt..... 7 @10

Miscellaneous.
Barytes, Foreign, ₱ ton....$20.00@23.00
Barytes, Amer. floated..... 18.00@20.00
Barytes, Crude..... 8.00@10.00
Chalk, in bulk.....₱ ton 2.00@ ..
Chalk, in bbls.....₱ 100 ℔ 35@ ..
China Clay, English..₱ ton 10.00@17.50
Cobalt, Oxide.....₱ 100 ℔ ....@ 1.76
Whiting, Common. ₱ 100 ℔ .30@ .40
Whiting, Gilders'..... .40@ .45
Whiting, extra Gilders'.... @ 55¢
Paris Green:
Arsenic, kegs or casks.....12
Kegs, 100 ℔ @ 175 ℔.....12½
Kits, 14, 28, 56 ℔.....13½
Paper Boxes, 2 @ 5 ℔.....13½
Paper Boxes, 1 ℔ 14
Paper Boxes, ½ ℔.....15
Paper Boxes, ¼ ℔.....16

Putty.
In barrels and ½ bbls..... 1 4-10@ 1½
In tubs..... 1½@1 6-10
In tin cans..... 1½@ 2
In bladders..... 1½@ 2

Spirits Turpentine.
In Southern bbls.... .....@44 ¢
In machine bbls .....@45½¢

Glue.
Low Grade.....₱ ℔ 7 @ 9
Cabinet.....11 @15
Medium White.....10 @15
Extra White.....15 @25
French.....10 @25
Irish.....10 @12½

Animal Fish and Vegetable Oils.
Linseed, City, raw.....₱ gal. 47 @48
Linseed, City, boiled.....49 @50
Linseed, Western, raw .....46 @47
Linseed raw Calcutta seed..... @58
Lard, Prime City, present make 44 @46
Lard, City, Extra No. 1.... ....35 @37
Lard, City, No. 1.....29 @31
Cotton-seed, Crude.....17 @19
Cotton-seed, Summer Yellow, prime.....23 @23½
Cotton-seed Summer Yellow, off grades..... .....21½@22
Sperm, Crude..... @55
Sperm, Natural Spring.....57 @59
Sperm, Bleached Spring.....61 @63
Sperm, Natural Winter..... @62
Sperm, Bleached Winter..... @65
Whale, Crude..... @40
Whale, Natural Winter..... @48
Whale, Bleached Winter..... @50
Whale, Extra Bleached Win.... @52
Menhaden, Crude, Sound.....22 @23
Menhaden, Light Pressed.....27 @28
Menhaden, Bleached Winter.... @ ..
Menhaden, Extra Bleached....34 @ ..
Tallow, Western, prime.....40 @41
Cocoanut, Ceylon..... @ 6¼
Cocoanut, Cochin..... @ 6¾
Cod, Domestic..... @35
Cod, Newfoundland.....36 @34
Red Elaine.....28 @30
Red Saponified.....₱ ℔ 3½@ 3¾
Bank.....₱ gal. @26
Straits..... @26
Olive, Italian, bbls.....56 @58
Neatsfoot, prime.....40 @43
Palm, prime, Lagos.....₱ ℔ 5 @ 5¼

Mineral Oils.
Black, 29 gravity, 25@30 cold test.....₱ gal. @ 7¼
Black, 29 gravity, 15 cold test. @ 8¾
Black, summer..... @ 7
Cylinder, light filtered..... @15¾
Cylinder, dark filtered..... @18
Paraffine, 23½@24 gravity..... @ 9¼
Paraffine, 25 gravity..... @ 8¾
Paraffine, 28 gravity..... @ 7¾
Paraffine, red, No. 1..... @ 9
In small lots ¼¢ advance.

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

MARCH 29, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ ℔; Square, 0.8¢ ₩ ℔	
¼ to 2 in. round and square; 1 to 6 in. x ⅜ to 1 in.	₩ ℔ 1.65¢ @ 1.75¢
Refined Iron:	
¼ to 2 in. round and square; 1 to 4 in. x ⅜ to 1½ in.; 4½ to 6 in. x ⅜ to 1-in.	₩ ℔ 1.75¢ @ 1.85¢
1 to 6 in. x ¼ and 5-16	₩ ℔ 1.95¢ @ 2.05¢
Angles	1.90¢
Tees	2.10¢
Beams	2.00¢
Channels	2.00¢
Rods—¾ and 11-16 round and sq'e.	₩ ℔ 1.85¢ @ 1.95¢
Bands—1 to 6 x 3-16 to No. 12	₩ ℔ 2.20¢ @ 2.45¢
"Burden's Best" Iron, base price	₩ ℔ 2.80¢
Burden's "H. B. & S. Iron, base price	₩ ℔ 2.60¢
"Ulster"	₩ ℔ 2.60¢
Norway Bars	3.50 @ 4.00¢
Norway Shapes	4.00 @ 4.25¢

Merchant Steel from Store—

	per ℔
Open Hearth and Bessemer Machinery	2.00 to 2.10¢
Toe Calk, Tire and Sleigh Shoe	2¼ to 2½¢
Best Cast Steel, base price in small lots	7 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Soft Steel Sheets—

¼ inch	2 30¢	No. 14	2.50¢
3-16 inch	2.35¢	No. 16	2.55¢
No. 8	2.40¢	No. 18	2.65¢
No. 10	2.40¢	No. 20	2.75¢
No. 12	2.45¢	No. 22	2.85¢

Sheet Iron from Store.

Black.

	Common American.	B. G. Cleaned American.
Nos. 10 to 16	₩ ℔, 2.45	2.65¢
Nos. 17 to 21	₩ ℔, 2.55	2.75¢
Nos. 22 to 24	₩ ℔, 2.65	2.85¢
Nos. 25 and 26	₩ ℔, 2.75	2.95¢
No. 27	₩ ℔, 2.85	3.05¢
No. 28	₩ ℔, 2.95	3.15¢

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 10½¢
Patent Planished	₩ ℔ A, 9½¢; B, 8¾¢, net.
Patent Planished Sheet Steel	₩ ℔ 8½¢

Galvanized.

	B. B.	
Nos. 10 to 16	₩ ℔, 12¢	70&5% off.
Nos. 17 to 21	₩ ℔, 13¢	
Nos. 22 to 24	₩ ℔, 14¢	
Nos. 25 to 26	₩ ℔, 15¢	
No. 27	₩ ℔, 16¢	
No. 28	₩ ℔, 17¢	
No. 29	₩ ℔, 19¢	
No. 30	₩ ℔, 21¢	

80 in. 1¢ ₩ ℔ higher.

Foreign Steel from Store—

Best Cast	₩ ℔ 14 ¢
Extra Cast	₩ ℔ 16½ @ 17 ¢
Swaged, Cast	₩ ℔ 16 ¢
Best Double Shear	₩ ℔ 14 ¢
Blister, 1st quality	₩ ℔ 12 ¢
German Steel, Best	₩ ℔ 10 ¢
2d quality	₩ ℔ 9 ¢
3d quality	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₩ ℔ 14 ¢
2d quality	₩ ℔ 13 ¢
3d quality	₩ ℔ 11 ¢
R. Mushet's "Special"	₩ ℔ 46 ¢
" " " Annealed	₩ ℔ 75 ¢
" " "Titanic"	₩ ℔ 19 ¢
Hobson's Choice XX Extra Best	₩ ℔ 35 ¢
Jessop Self Hardening	₩ ℔ 40 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson Self-Hardening	₩ ℔ 40 ¢

METALS—

Tin—

	Duty.—Pigs, Bars and Block. Free.	Per ℔
Banca, Pigs		26¢
Straits, Pigs		25¢
Straits in Bars		26¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$6.25@6.50
IX, 14 x 20	7.75@8.00
Melyn Grade:	
IC, 14 x 20	6.00
IX, 14 x 20	7.25
Allaway Grade:	
IC, 14 x 20	5.00@5.25
IX, 14 x 20	6.00@6.25

American Coke Plates—Bright—

IC, 14 x 20 ....108 ℔	$4.50@4.60
IX, 14 x 20	5.40@5.50
IXX, 14 x 20	6.05@6.15

American Terne Plates—

IC, 20 x 28	$8.50@ 9.00
IX, 20 x 28	10.5 @11.00

Tin Boiler Plates, American—

IXX, 14 x 20 ....112 sheets	$10.50
IXX, 14 x 28 ....112 sheets	11.45
IXX, 14 x 31 ....112 sheets	12.85

Copper—

DUTY: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake	19¢
Ansonia grade Casting	18@18¼¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, split sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 30 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9⅜ to 11 lb.	10 oz. and 11 oz. 7¾ to 9⅜ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	21½	21½	21½	21½	22½	23½	24½	27½	30½
30	96	72	21½	21½	21½	21½	22½	24½	27½	30½	
30	.....	96	21½	21½	21½	21½	23½	27½	30½		
36	72	.....	21½	21½	21½	21½	23½	25½	28½	31½	
36	96	72	21½	21½	21½	21½	23½	27½	30½		
36	120	96	21½	21½	22½	22½	24½				
36	.....	120	21½	21½	22½	23½					
48	72	.....	21½	21½	22½	23½	25½	28½	31½		
48	96	72	21½	21½	22½	24½	26½	29½			
48	120	96	21½	21½	23½	25½	29½				
48	.....	120	21½	22½	24½	27½					
60	72	.....	21½	22½	23½	24½	27½	32½			
60	96	72	21½	23½	25½	30½					
60	120	96	21½	22½	24½	27½					
60	.....	120	21½	23½	25½	29½					
72	96	.....	21½	22½	24½	29½					
72	144	96	21½	23½	26½	31½					
72	.....	144	22½	24½	29½						
108	120	.....	22½	24½	30½						
108	.....	120	24½	25½							
wider than 108	.....	144	25½	27½							
	.....	144	26½	29½							

Bolt Copper, ¾ inch diameter and over, ₩ ℔ 21½¢
Circles, Segments and Pattern Sheets, 3¢ ₩ ℔ advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ ℔ advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ ℔ advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ ℔ more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ ℔	25½¢
12 oz. and up to 14 oz. to square foot, ₩ ℔	26½¢
10 oz. and up to 12 oz., ₩ ℔	28½¢
Lighter than 10 oz., ₩ ℔	31½¢

Circles less than 8 in. diameter, 2¢ ₩ ℔ addition al.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8	9 and 10	11 and 12
	20¢	20½¢	20¼¢
Nos.	13	14	15	16
	20½¢	20¾¢	21¢	21¾¢
Nos.	17	18	19	20
	21¼¢	22¢	22¼¢	22¾¢

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	.....	.....	.....	.....	33	31	30	29	28	27	25	24
12	10	.....	.....	37	35	33	31	30	29	28	27	25	24
13	11	.....	37	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	45	43	41	40	39	38	37	36	35	34
22	21	71	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	23	24	25	27	28 ₩ ℔

Copper, Bronze or Gilding Tubes, 3¢ ₩ ℔ additional.

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896
Brown & Sharpe's gauge standard.

				Per ℔.
Plain Round Tube, ¾ in. up to 2 in.				$0.35
"	"	⅞	"	.36
"	"	⅝	"	.38
"	"	¾	"	.41
"	" 5-16	"	⅝	.48
"	" ¼	"	5-16"	.65
"	" 3-16	"	¼ "	1.00
"	" ⅛	"	3-16"	1.50
Smaller than ¼ inch				Special
3 inch and larger				.40
Over 3 inch to 3½ inch, inclusive				.45
Over 3½ inch				.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list %..... 35%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39

Common High Brass. Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add 1¢ ₩ ℔ additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 20%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28¼
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.79
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 20%; Copper Wire, NET. List November 16, 96.
Spring Wire, 2¢ ₩ ℔ advance.

Spelter—Duty: In Blocks or Pigs, 1¢ ₩ ℔

Western Spelter	6¾@7¢

Zinc.

Duty: Sheet, 2¢ ₩ ℔.

600 ℔ casks	8¢ | Per ℔ 8½¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.

American Pig	4¾@5¢
Bar	6¢
Pipe (full lengths), subject to discount 20%	6¾¢
Pipe cut lengths), subject to discount 20%	7¼¢
Tin Lined Pipe, subject to discount 20%	12 ¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet (full rolls) subject to discount 20%	7¾¢
Sheet (cut rolls (subject to discount 20%	8¾¢
Old Lead in exchange, 4¢ ₩ ℔.	

Solder.

½ & ¼, guaranteed	16½¢
No. 1	15@15½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson	₩ ℔ 11½@12¢
Hallett's	₩ ℔ 10½@10¾¢
U. S.	₩ ℔ 10¼@10½¢

Aluminum—

Duty: Crude, 8¢ ₩ ℔. Plates, Sheets, Bars and Rods 13¢ ₩ ℔.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:	
Small lots	₩ ℔ 37¢
100-℔ lots	₩ ℔ 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:	
Small lots	₩ ℔ 34¢
100-℔ lots	₩ ℔ 33¢
Special casting Alloy, containing over 80% pure Aluminum:	
Small lots ₩ ℔ 35¢ | 100-℔ lots	₩ ℔ 30¢
Aluminum Rods, from ¾-in. diam. to 1 in. diam.	₩ ℔ 53¢
Aluminum Sheet, B. & S. gauge. 50 ℔ or more.	

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₩ ℔.	₩ ℔.	₩ ℔.
Nos. 13 to 19	$0.38	$0.40	$0.43
No. 20	.40	.42	.45
Nos. 21 to 23	.42	.44	.47
No. 24	.42	.46	.49
No. 25	.43	.47	.50
No. 26	.43	.50	.55
No. 27	.44	.53	.58
No. 28	.44	.53	.60
No. 29	.45	.56	.65
No. 30	.46	.60	.73

Note.—Lots of less than 50 ℔ 5¢ ₩ ℔ extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 1 ₩ ℔ 55¢	No. 17 to No. 20 ₩ ℔ 80¢
No. 1 to No. 8 ₩ ℔ 60¢	No. 21 ₩ ℔ $1.15
No. 9 to No. 16 ₩ ℔ 65¢	

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₩ ℔ 14½¢
Light and Tinned Copper	₩ ℔ 13¾¢
Heavy Brass	₩ ℔ 10 ¢
Light Brass	₩ ℔ 8½¢
Lead	₩ ℔ 3¾¢
Tea Lead	₩ ℔ 4½¢
Zinc	₩ ℔ 4½¢
No. 1 Pewter	₩ ℔ 16 ¢
No. 2 Pewter	₩ ℔ 9 ¢
Tin Plate Scrap	₩ ton $3.50
Wrought Scrap Iron	₩ gross ton $9.25
Heavy Cast Scrap	₩ gross ton $8.50
Stove Plate Scrap	₩ gross ton $6 00
Burnt Iron	₩ gross ton $3.75

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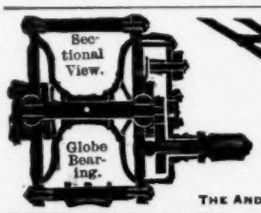

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Dict. by J. S. Sr. *James Spiers Pres*

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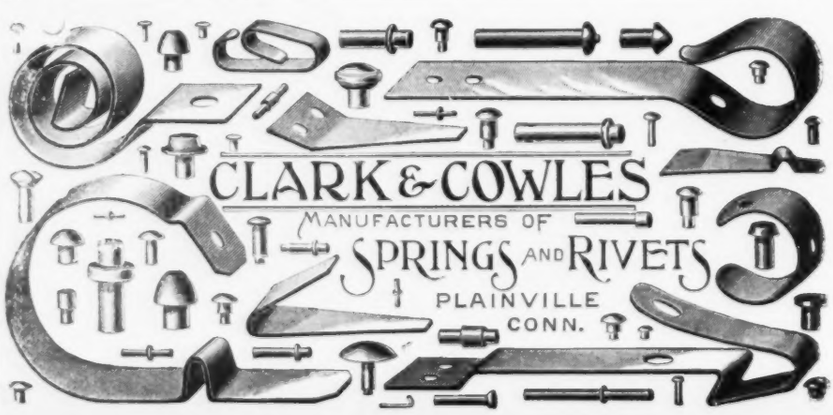

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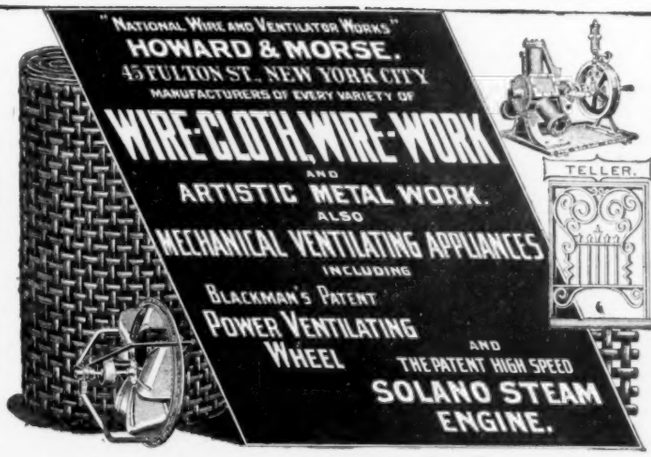

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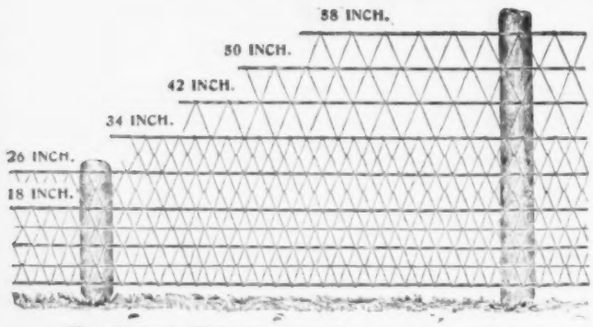

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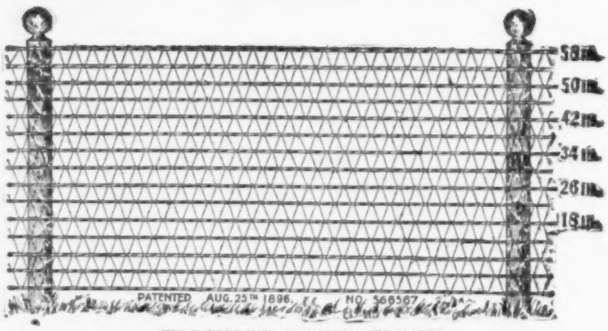

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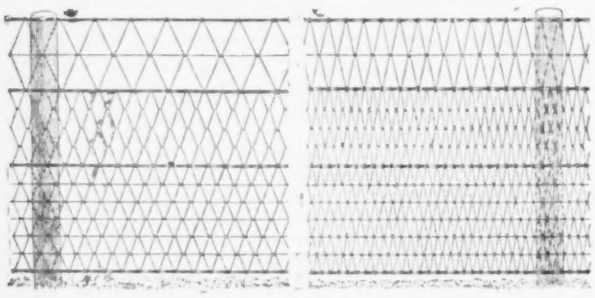

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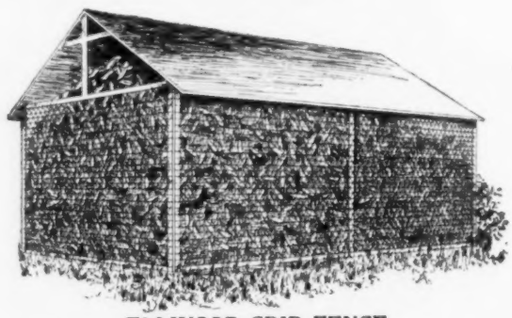

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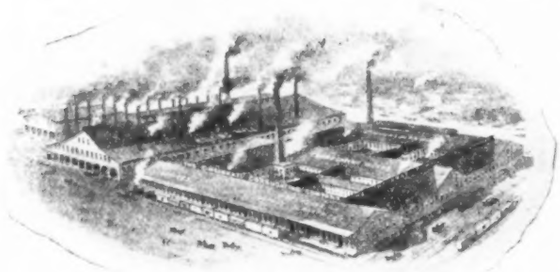

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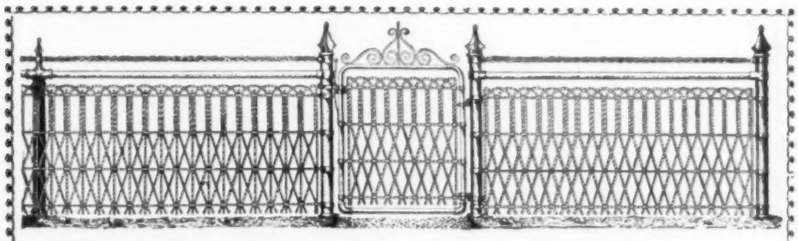

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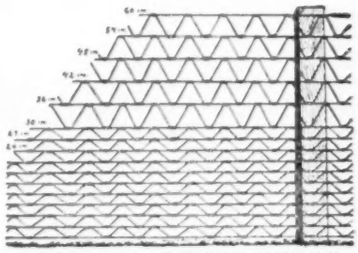

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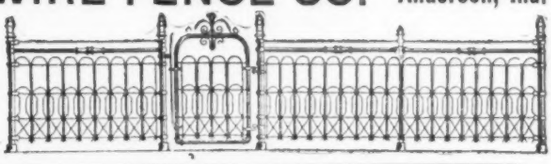

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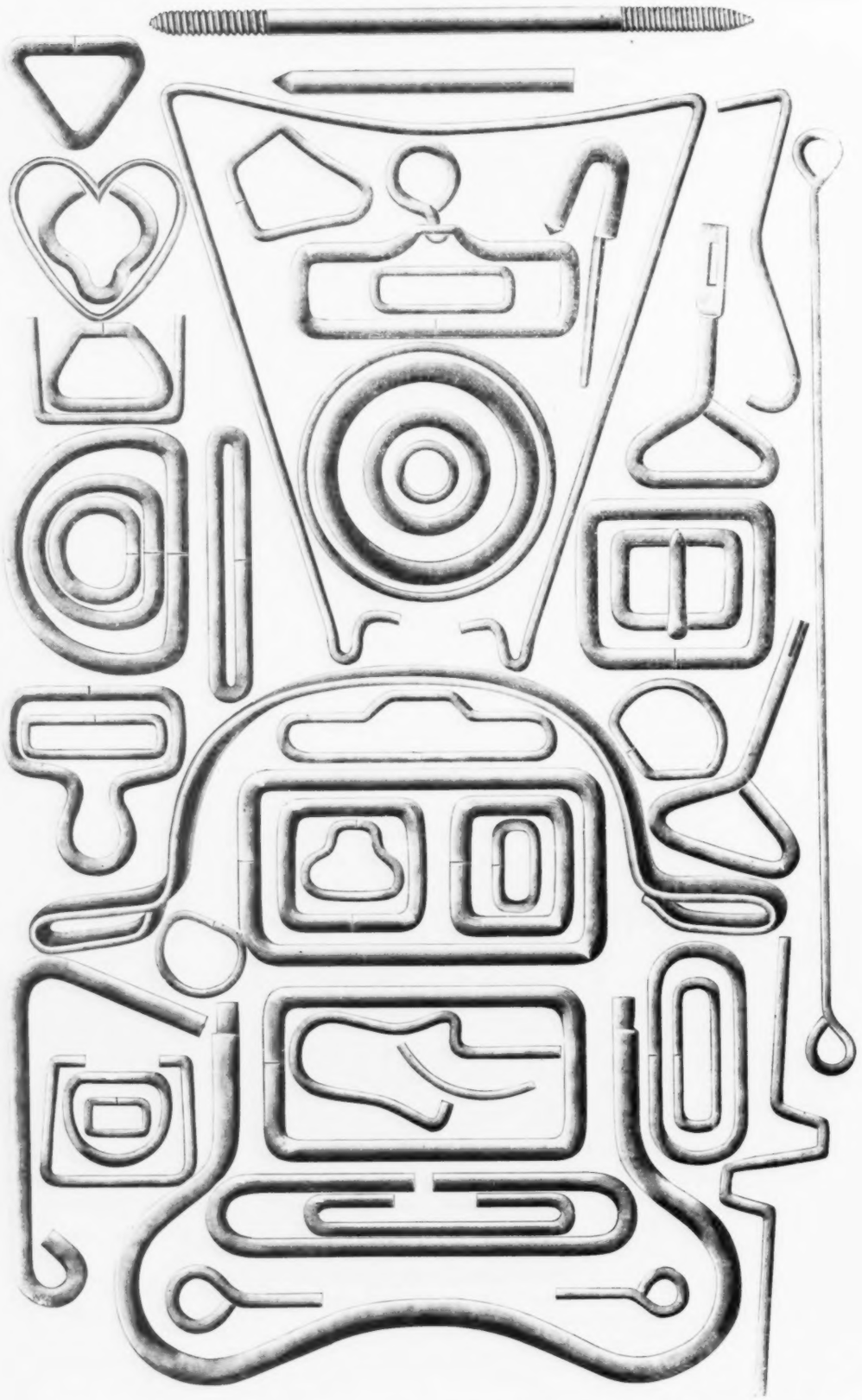

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It rolls up like a carpet.
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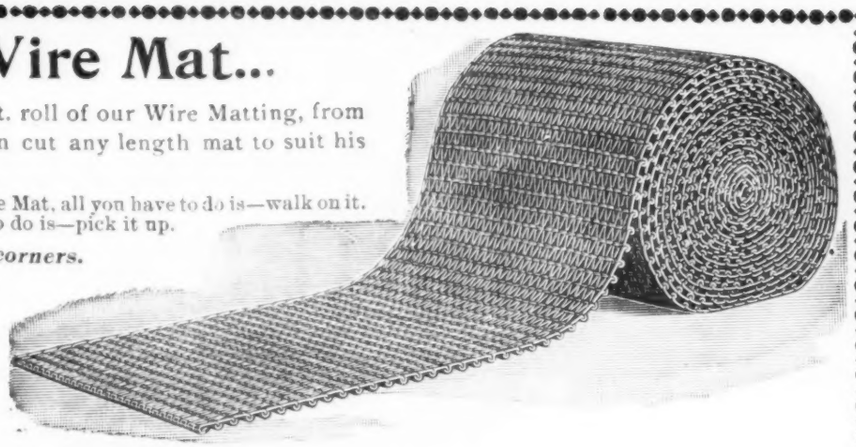

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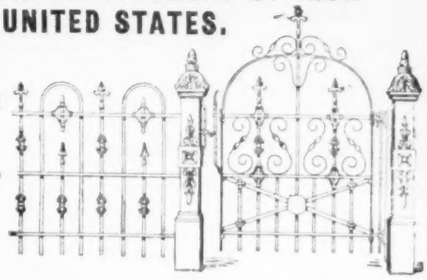

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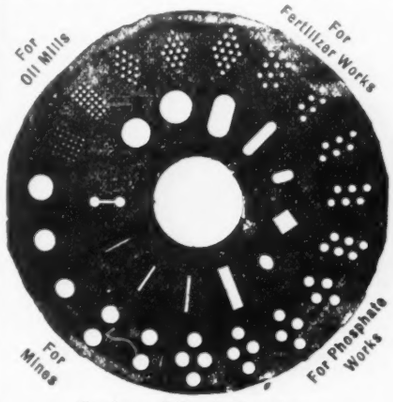

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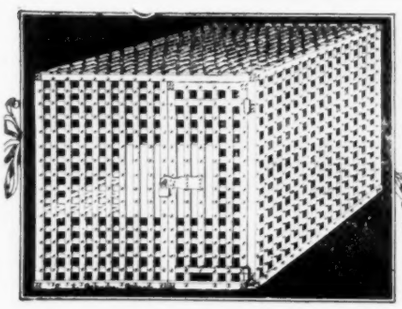

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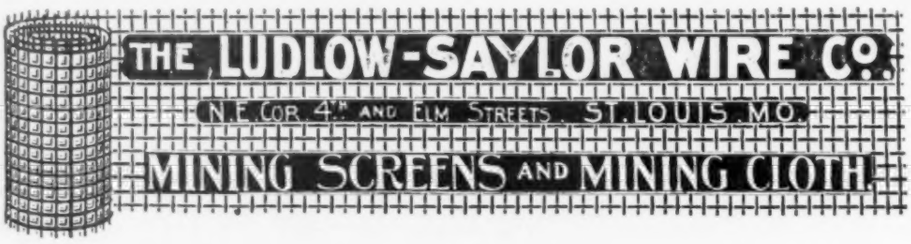

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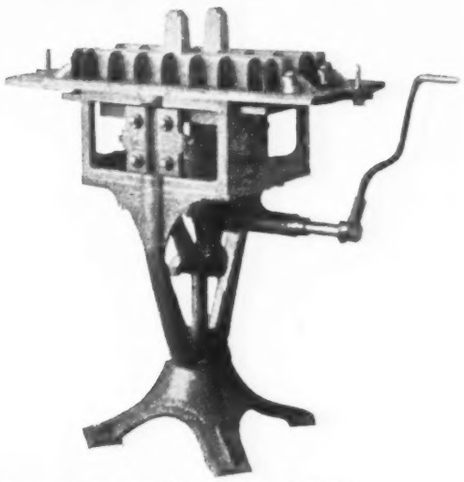

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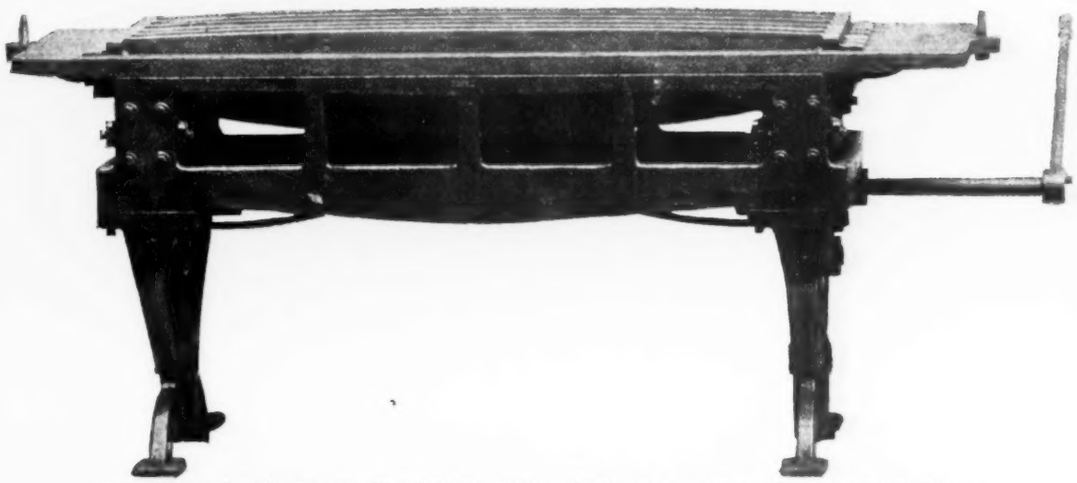

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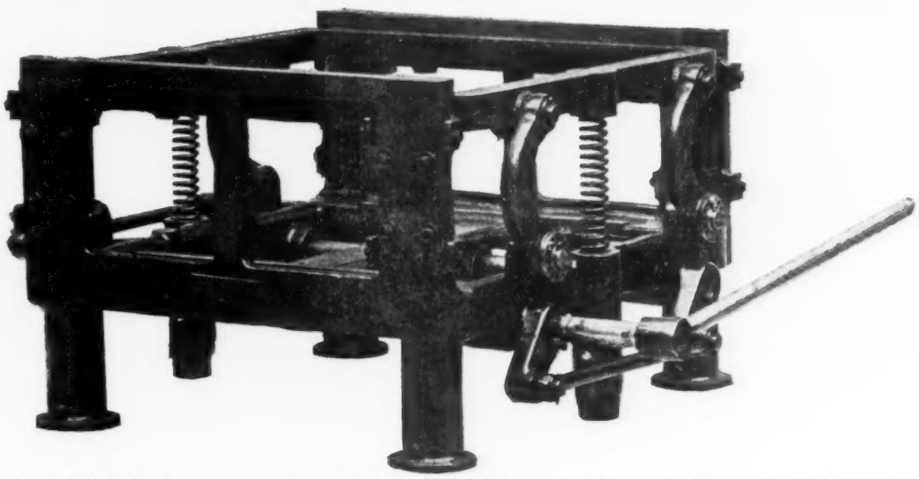

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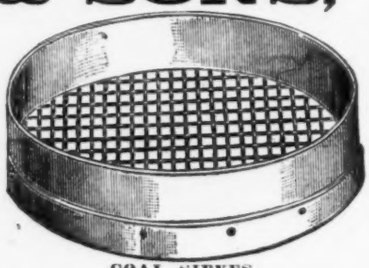

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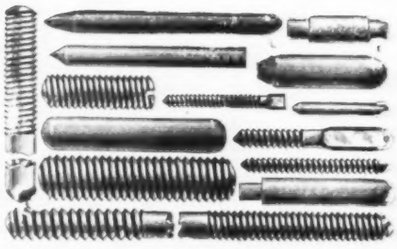

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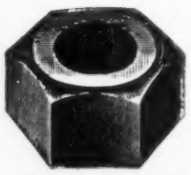

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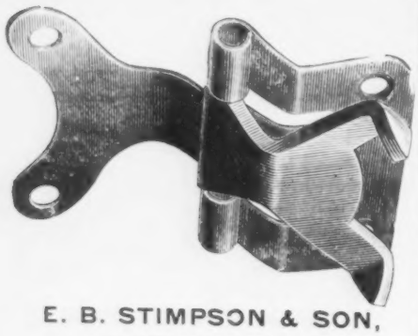

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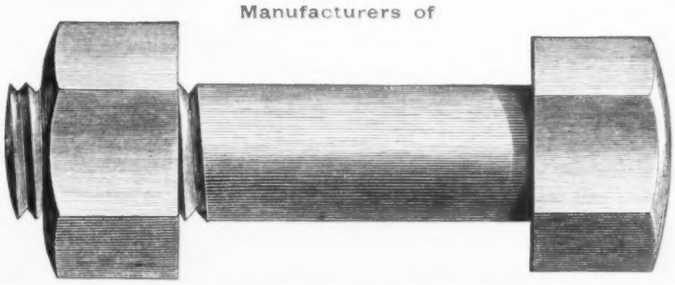

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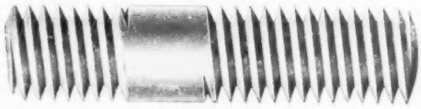

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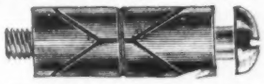

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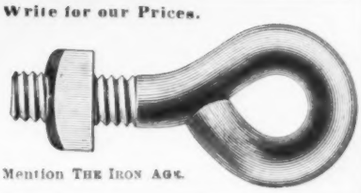

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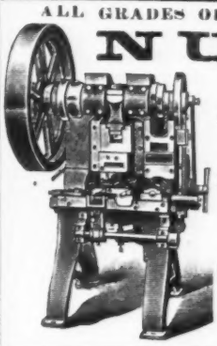

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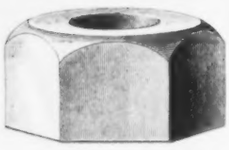

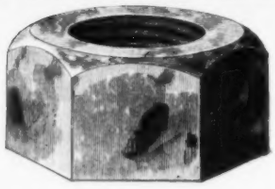

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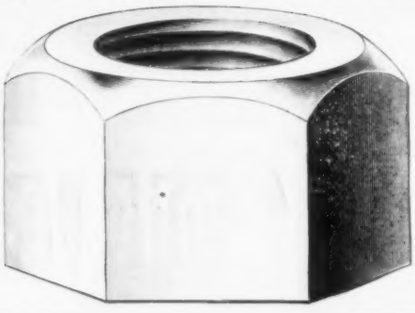
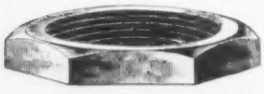

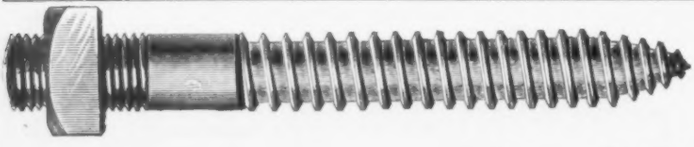

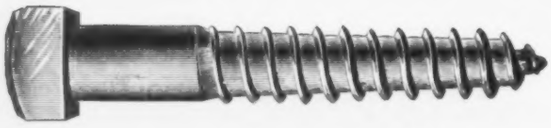

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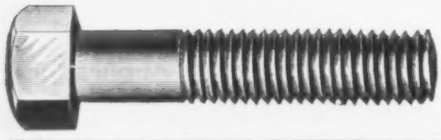

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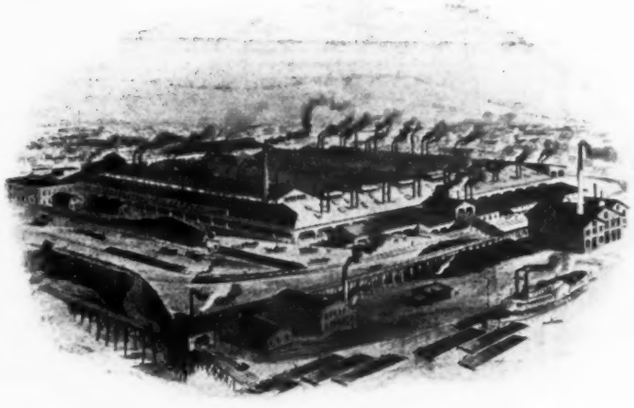

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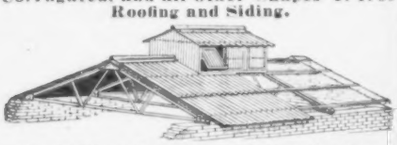

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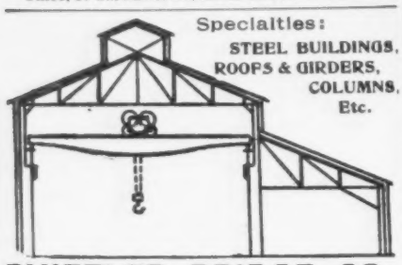

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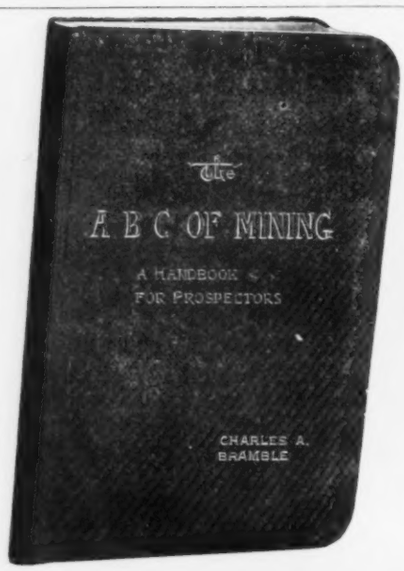

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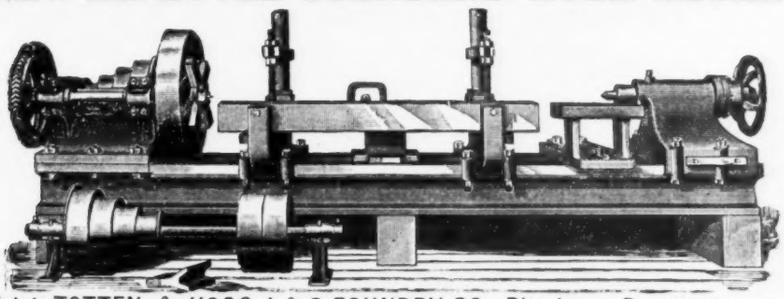

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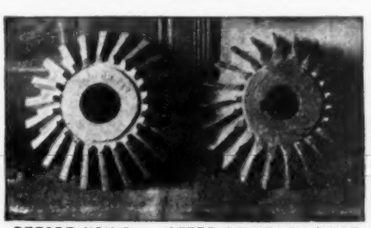

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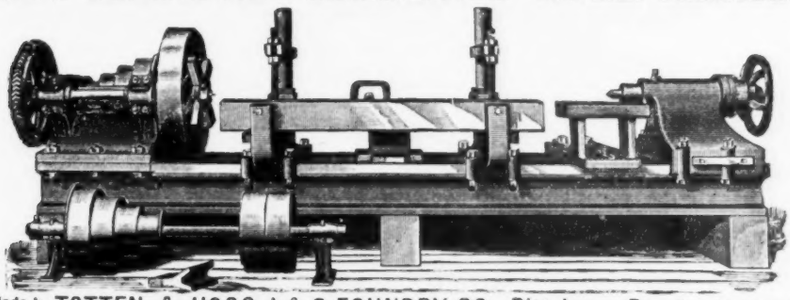

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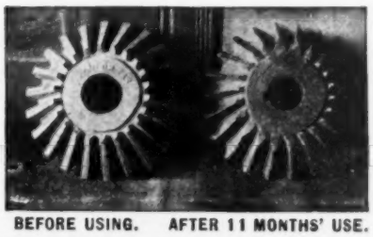

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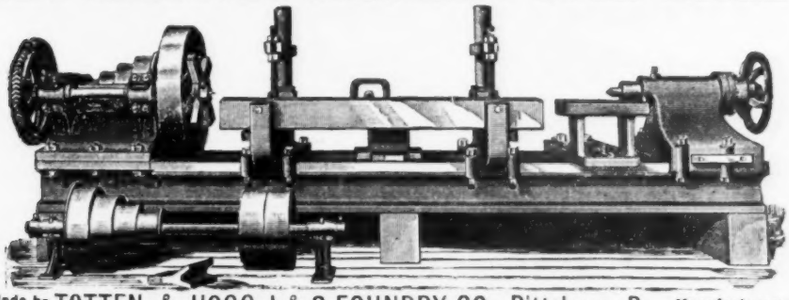

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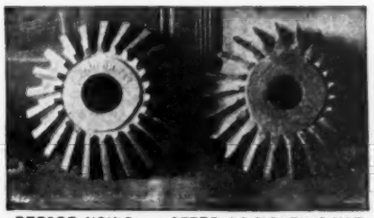

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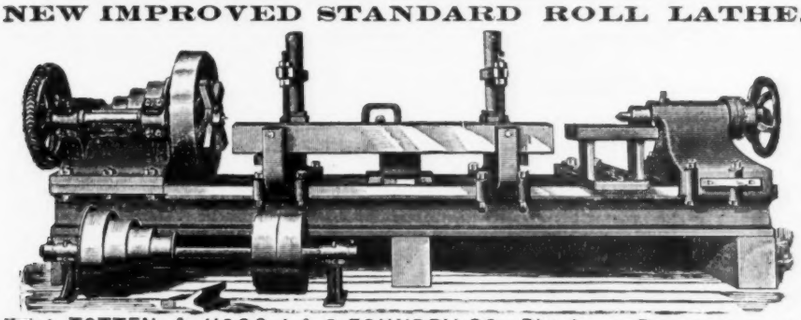

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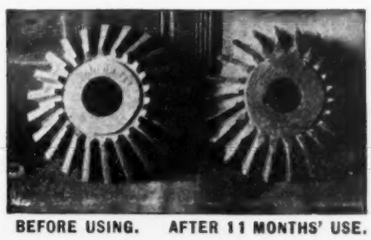

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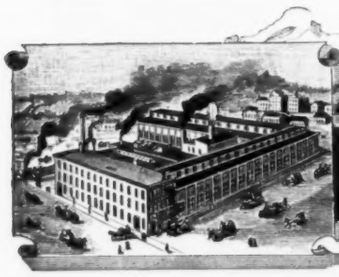

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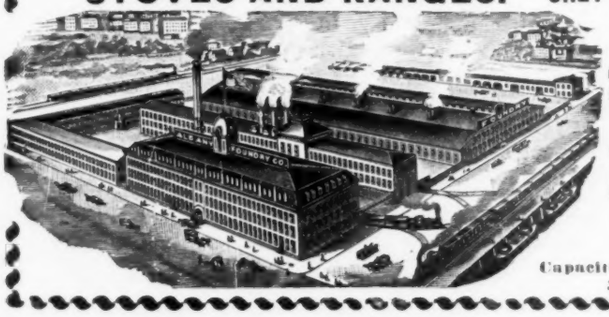

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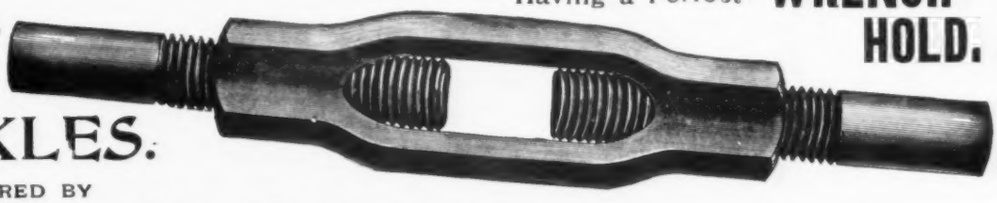

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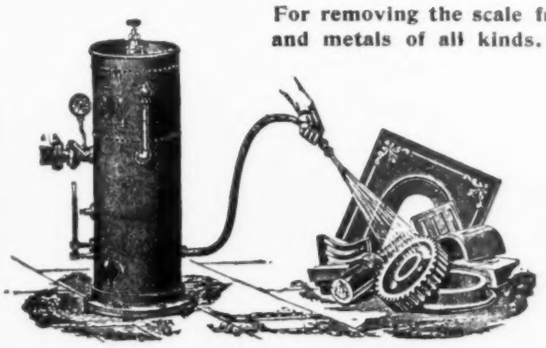

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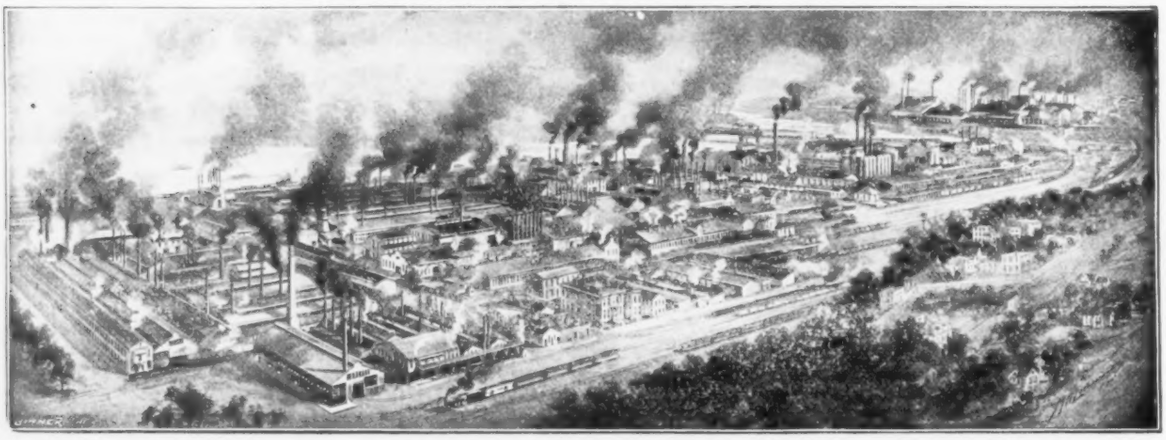

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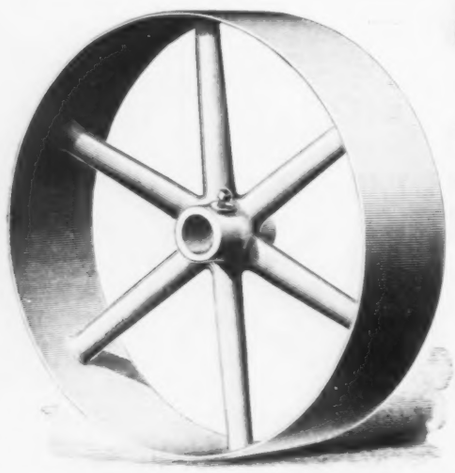

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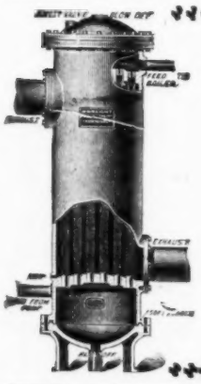

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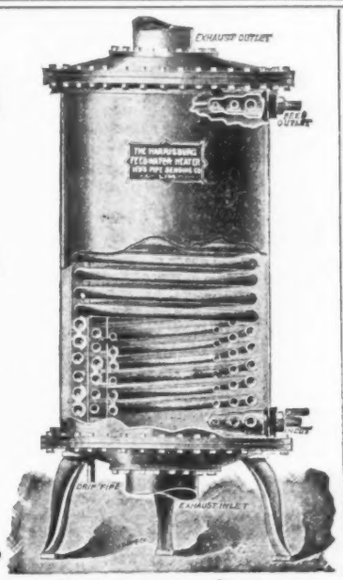

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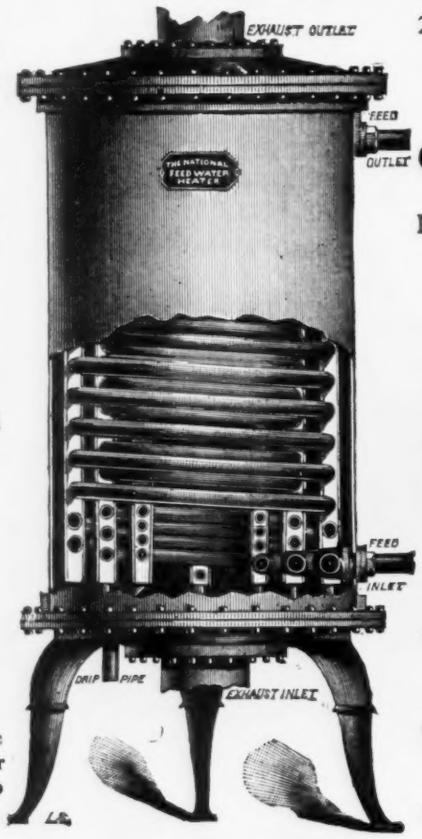

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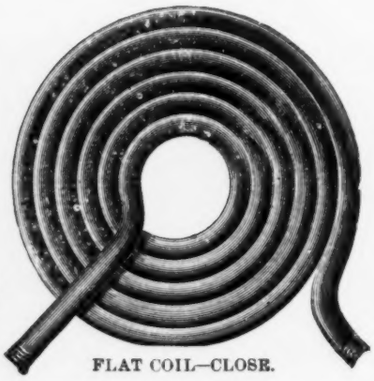

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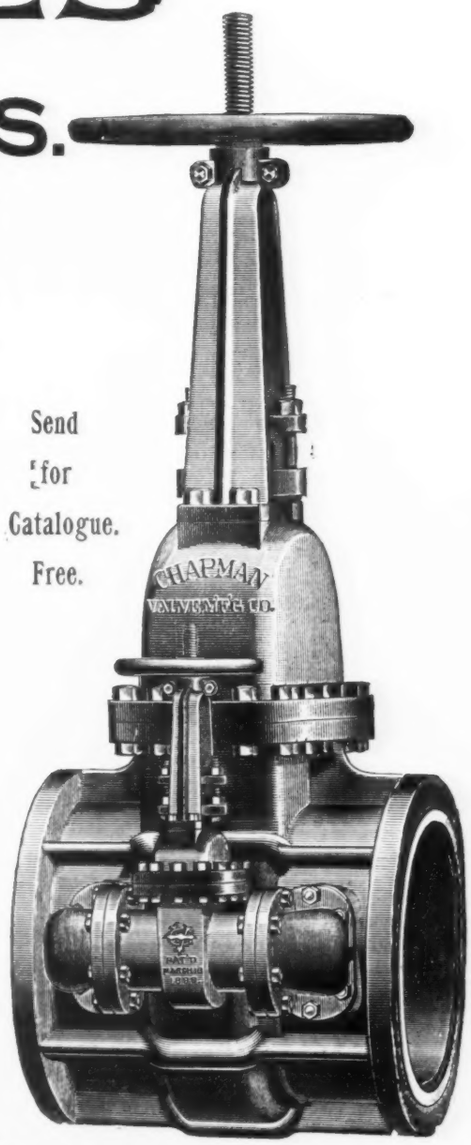

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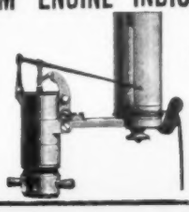

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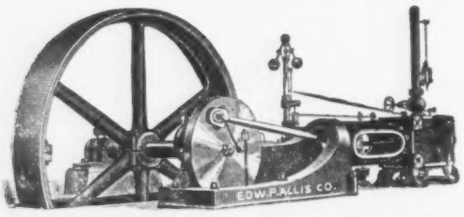

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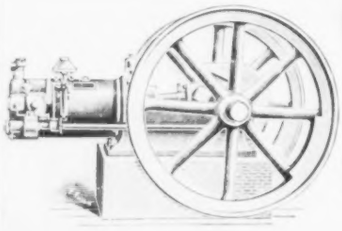

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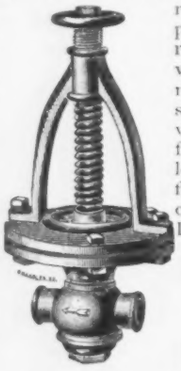

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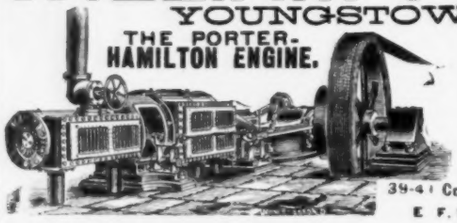

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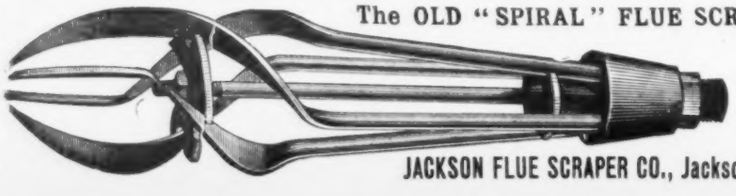

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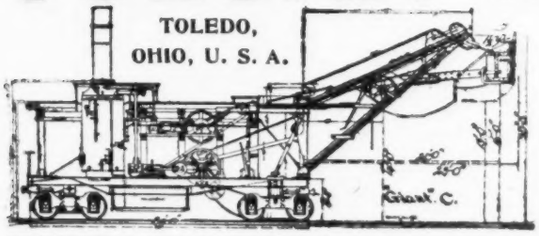

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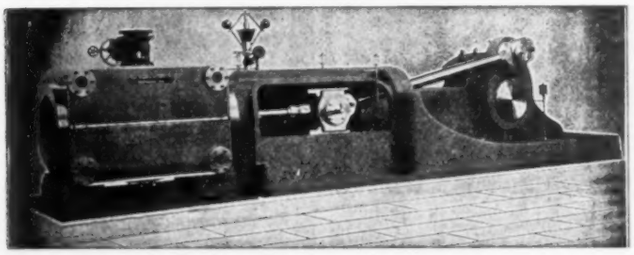

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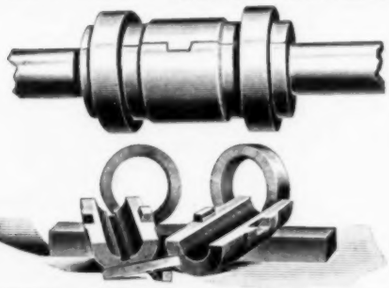

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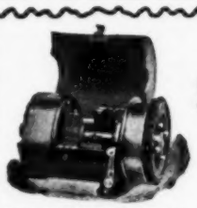

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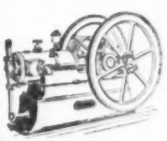

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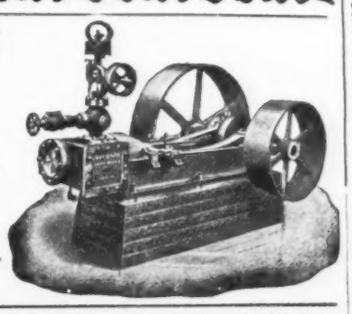

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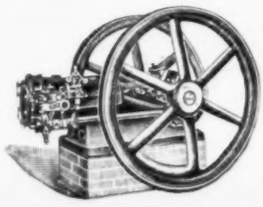

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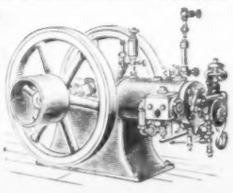

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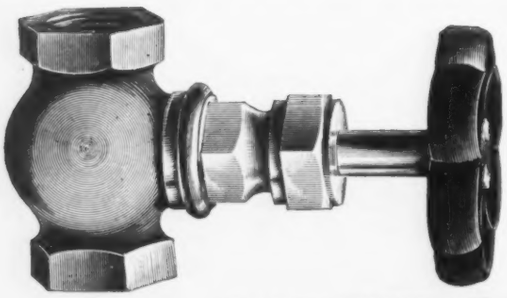

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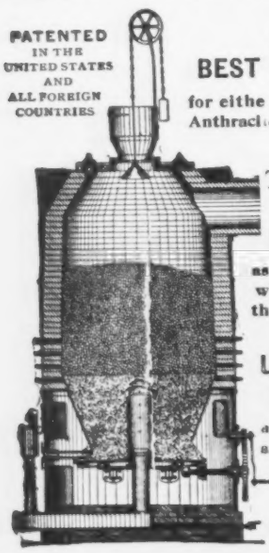

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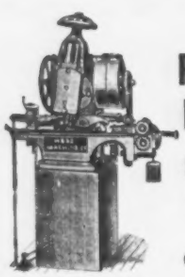

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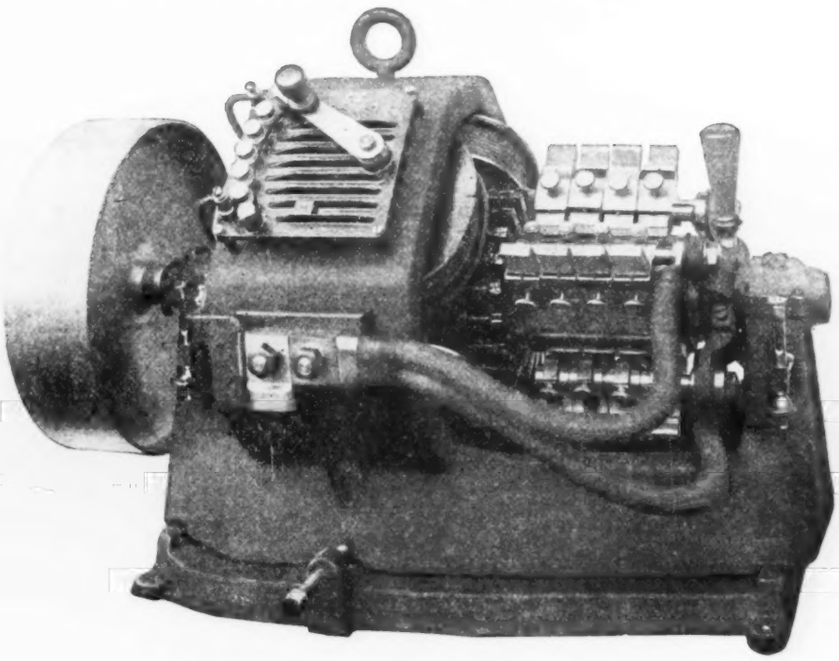

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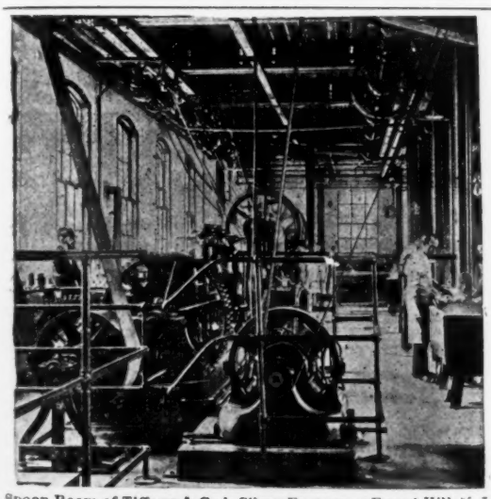

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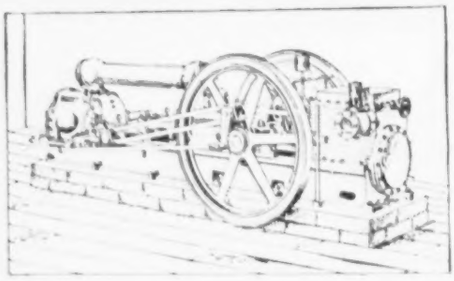

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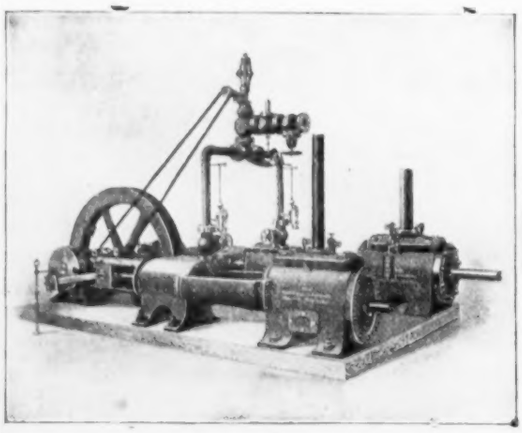

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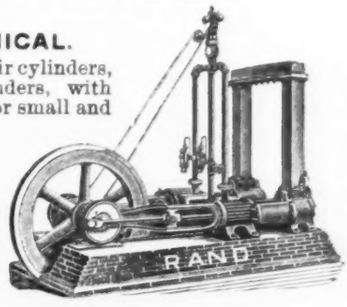

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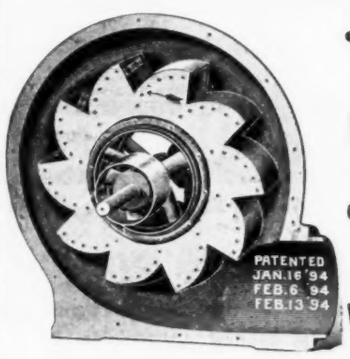

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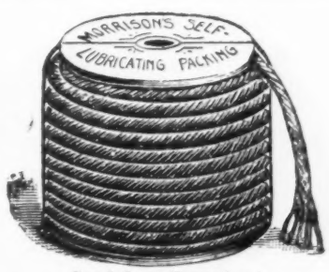

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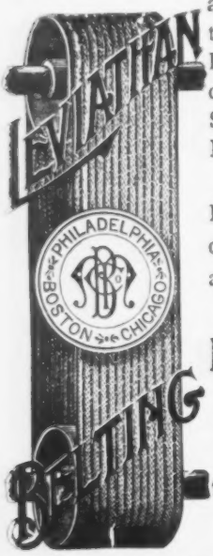

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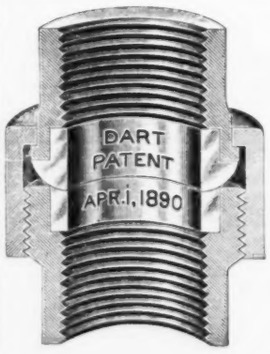

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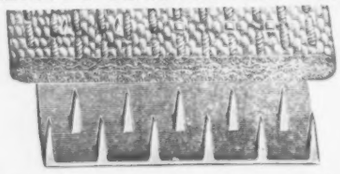

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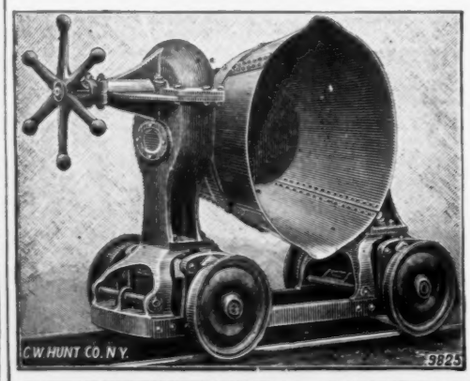

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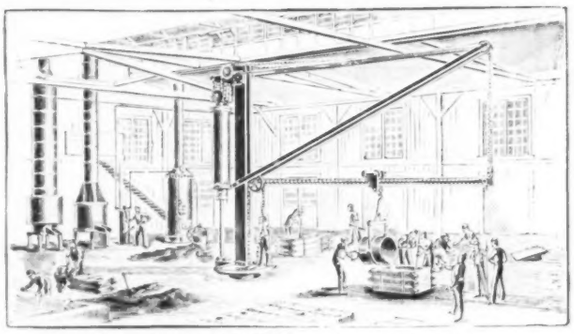

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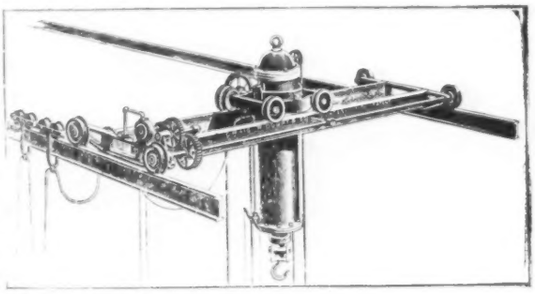

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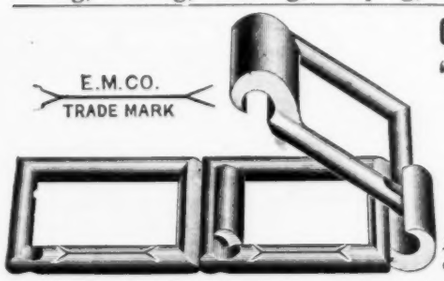

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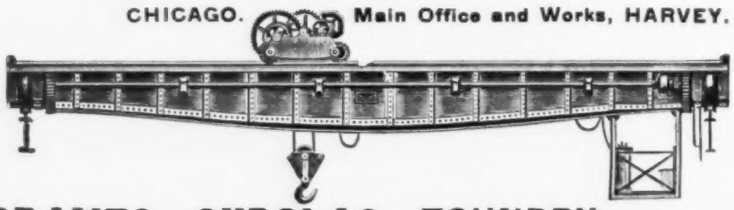

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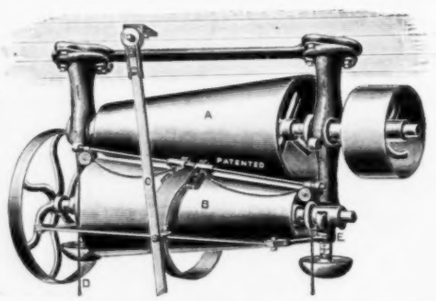

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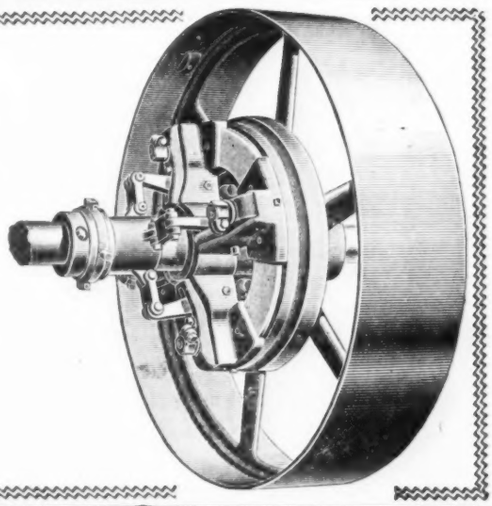

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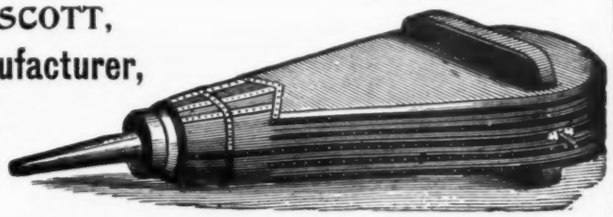

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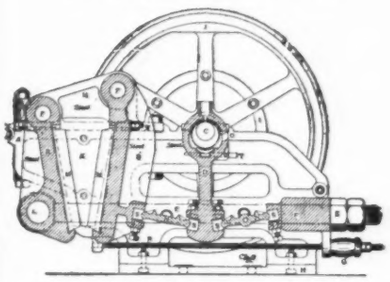

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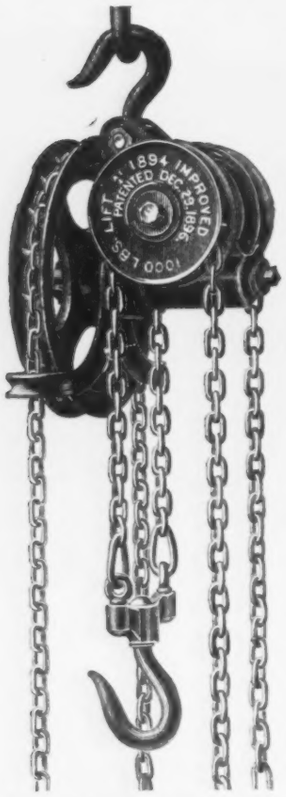

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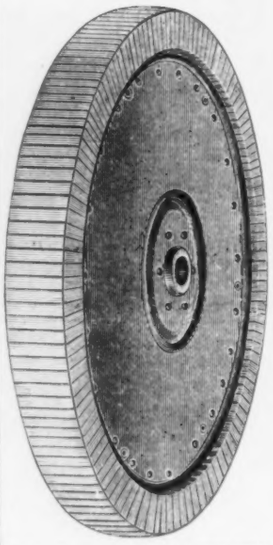

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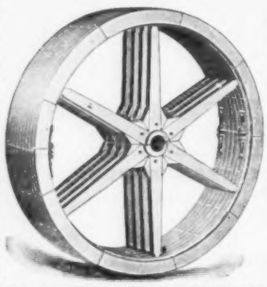

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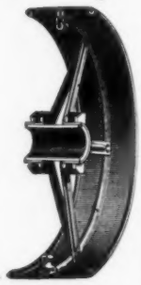

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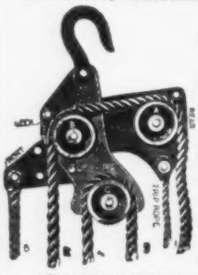

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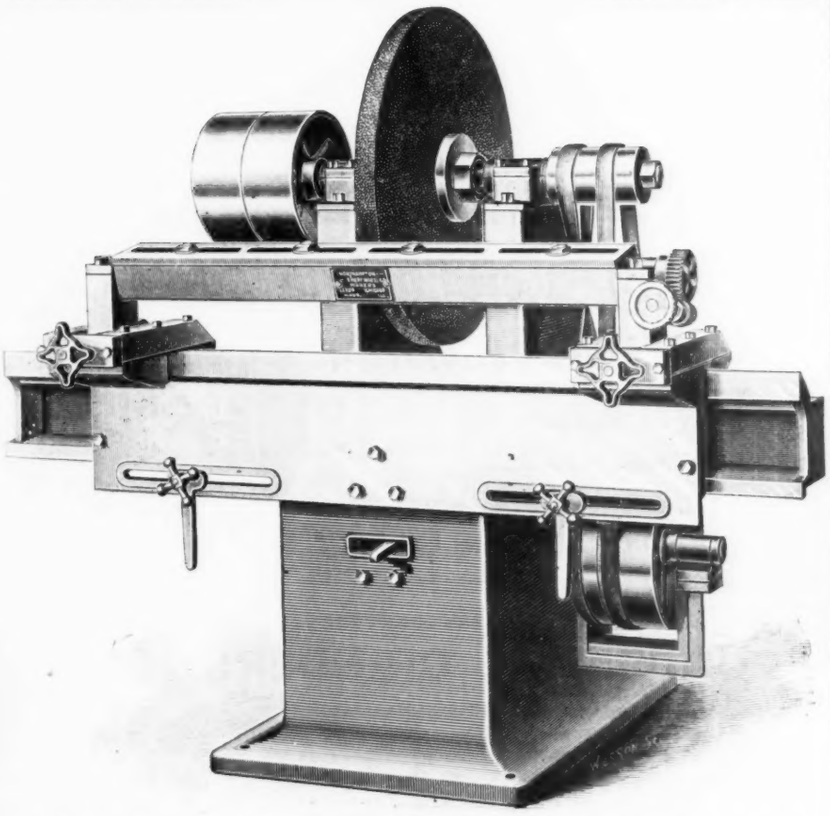

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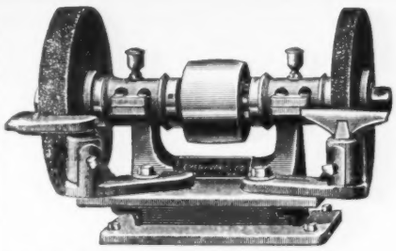

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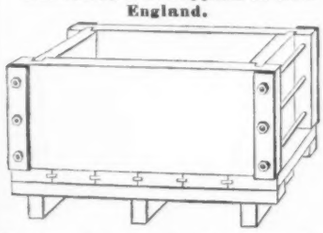

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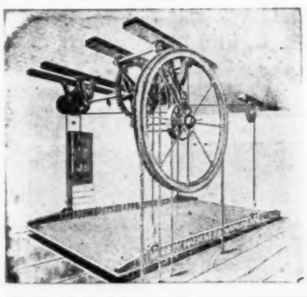

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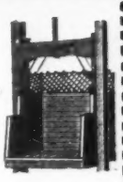

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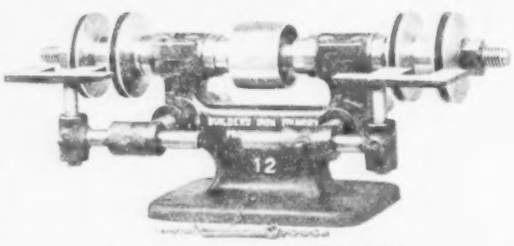

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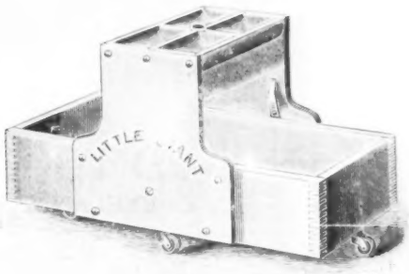
Send for  Catalog.

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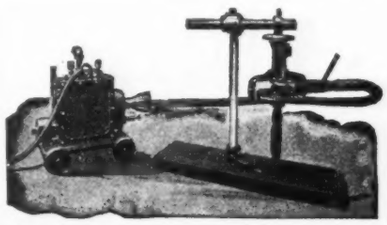

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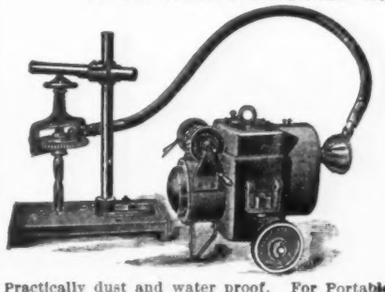

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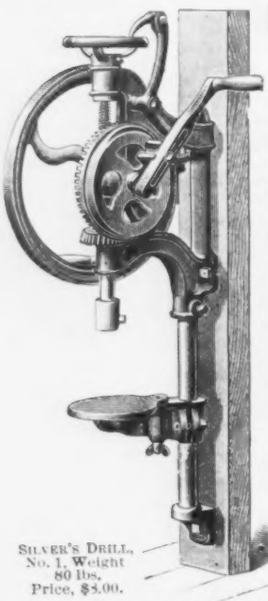

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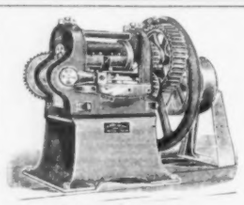

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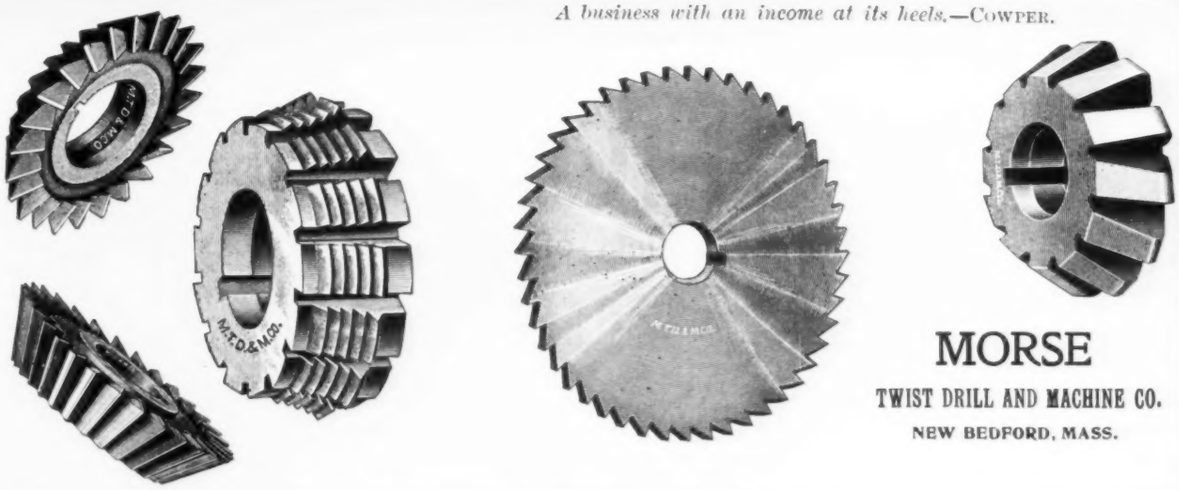

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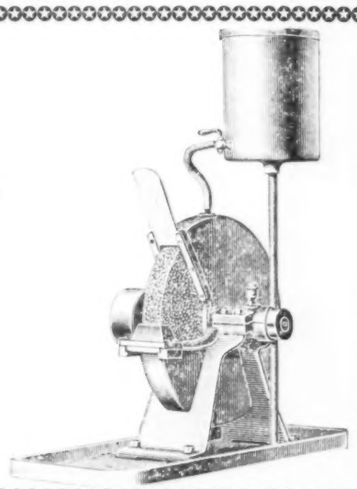

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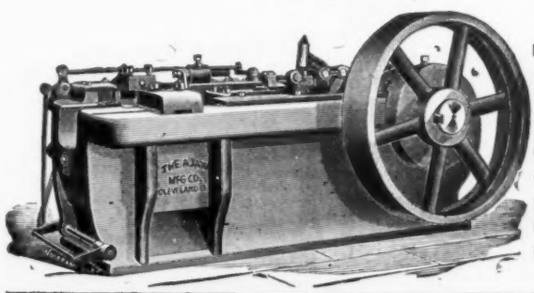

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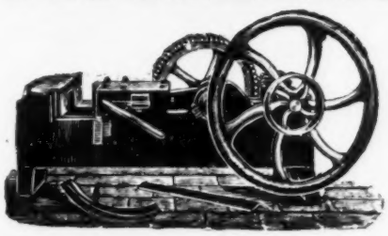

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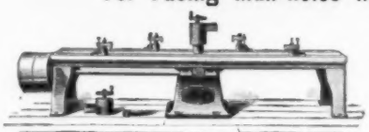

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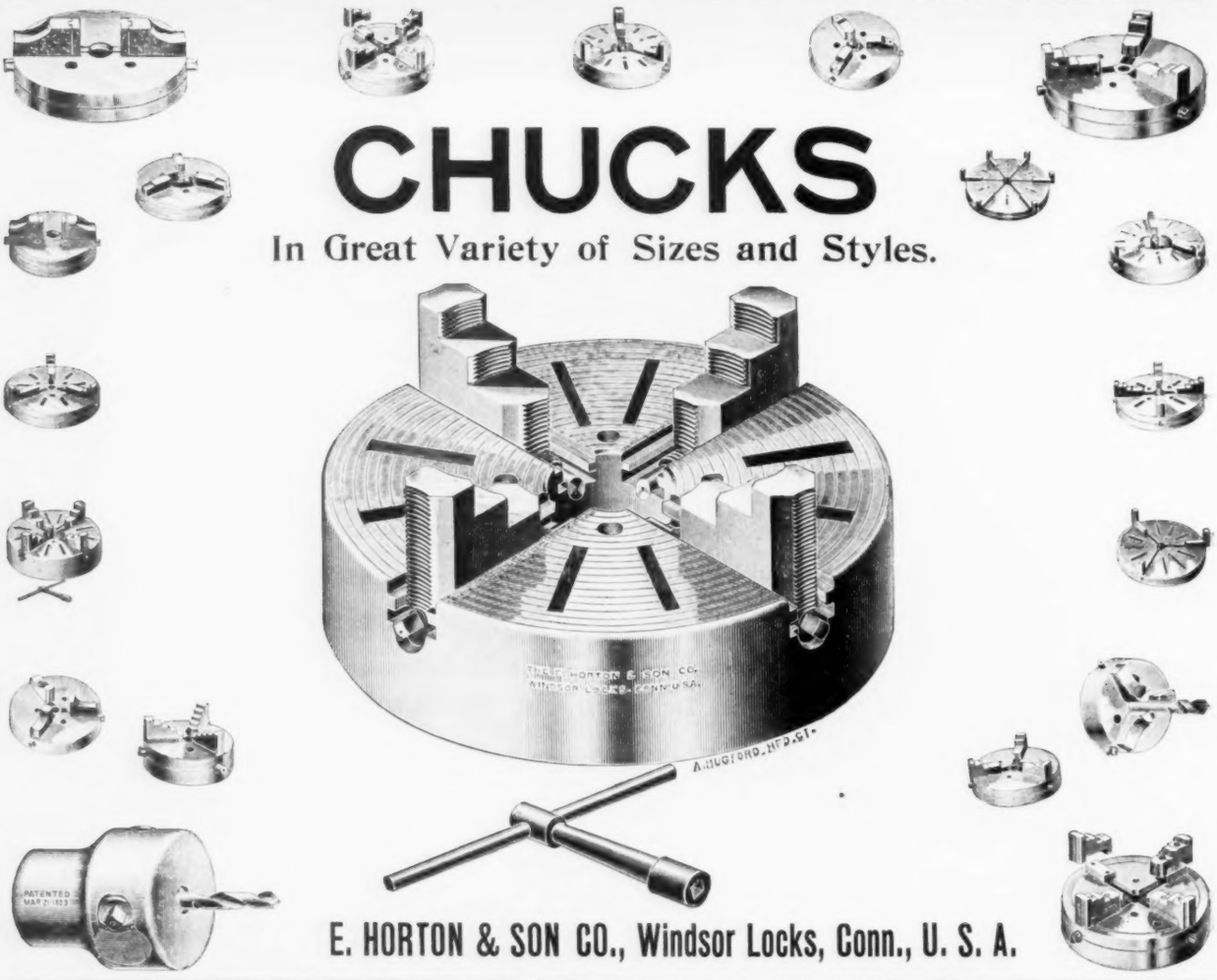

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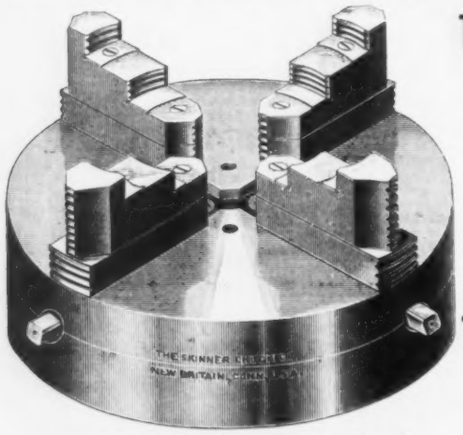

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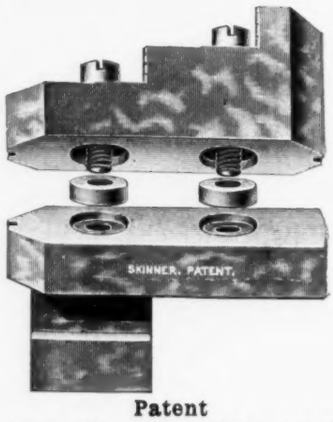

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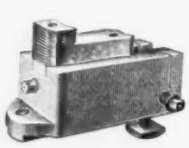

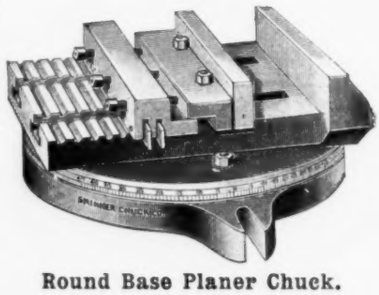

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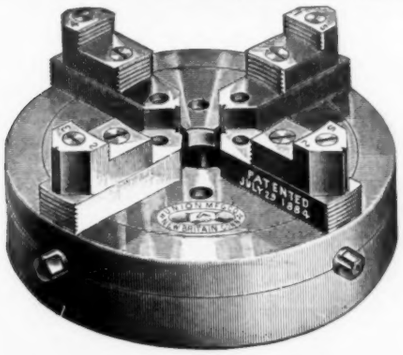

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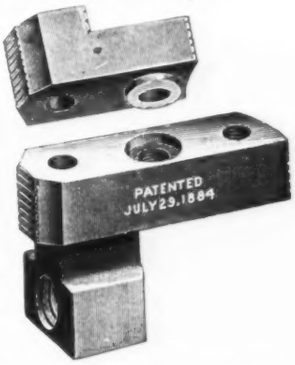

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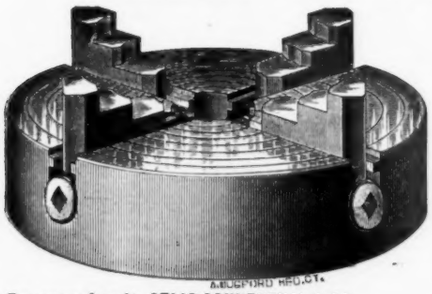

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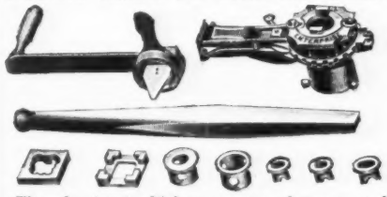

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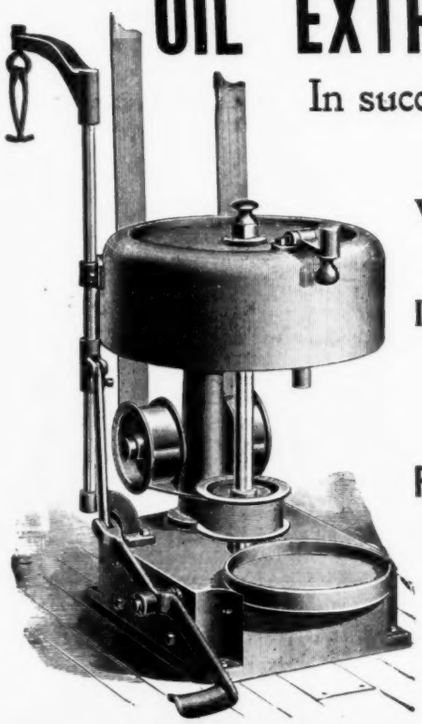

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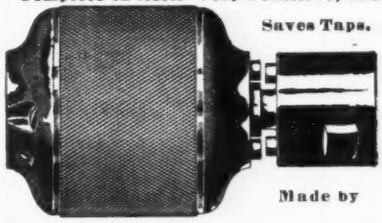

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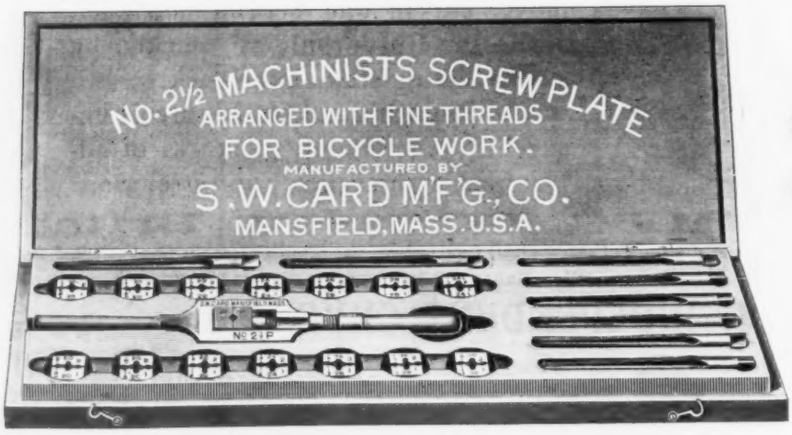

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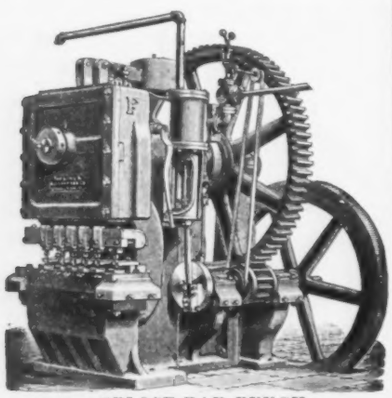

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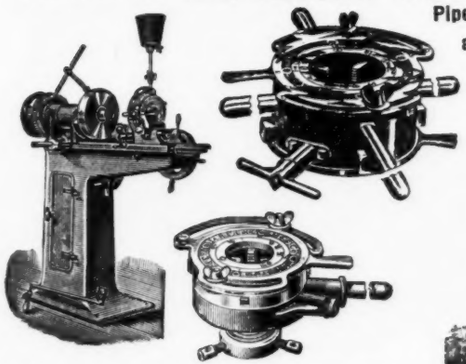

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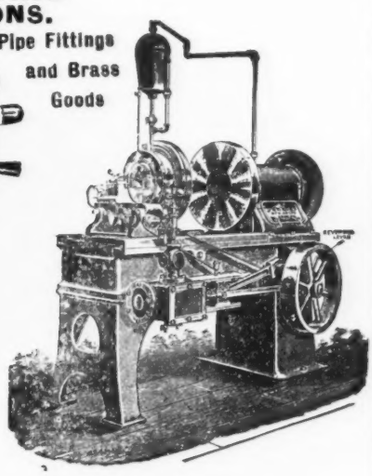

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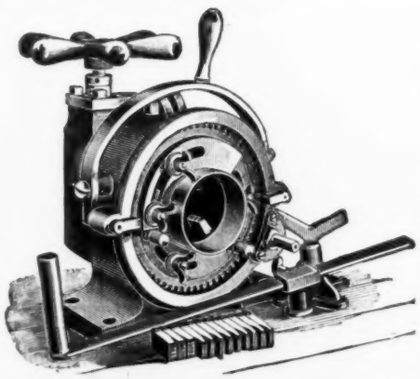

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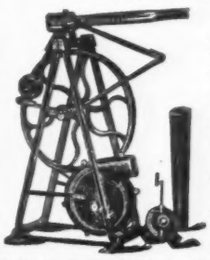

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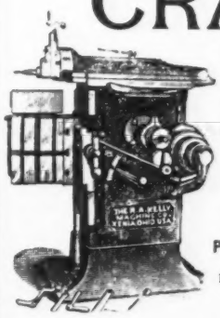

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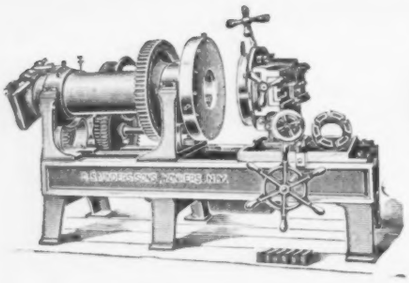

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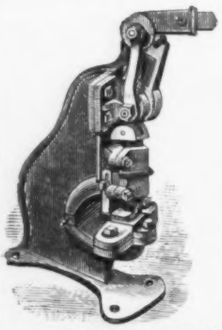

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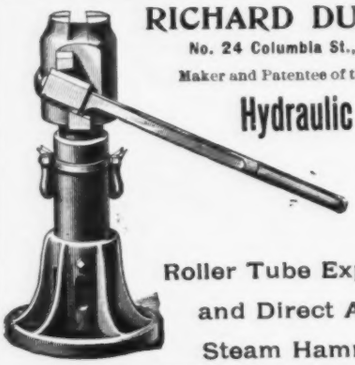

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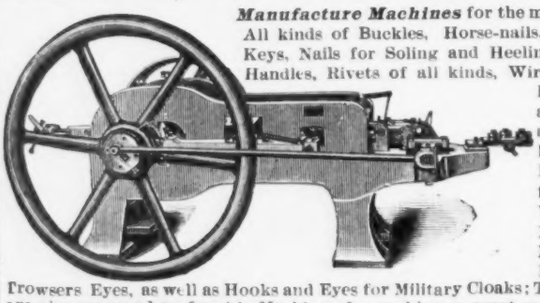

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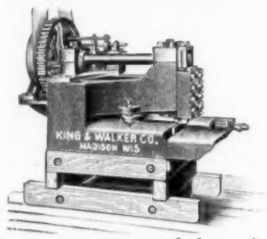

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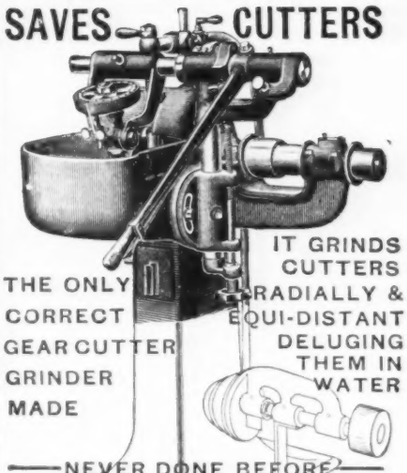

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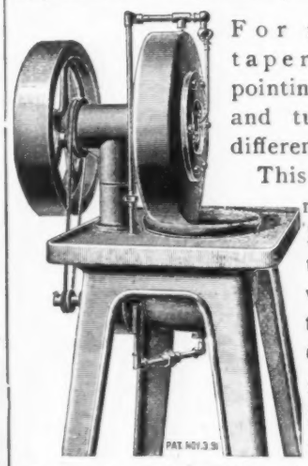

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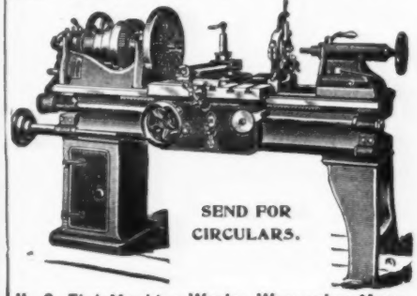

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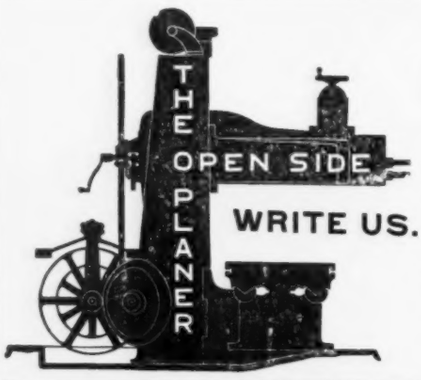

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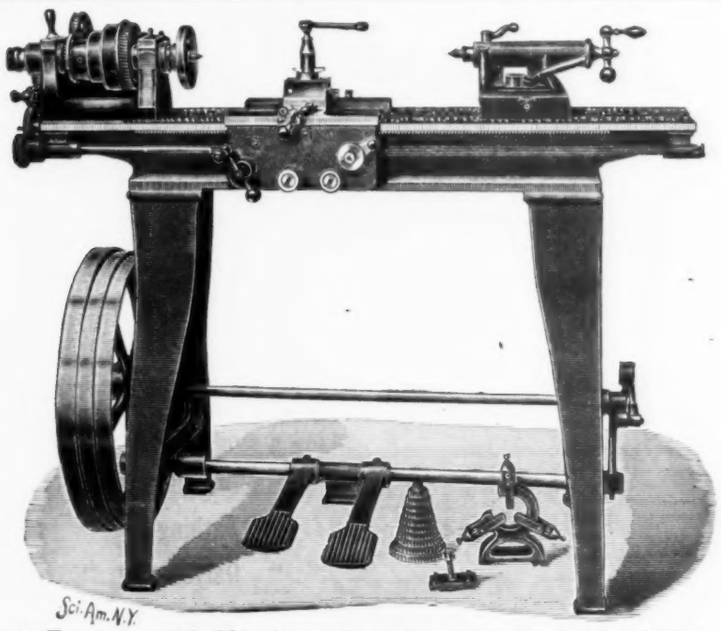

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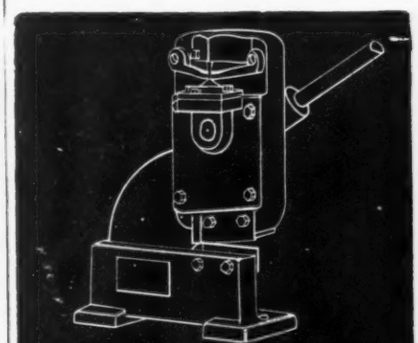

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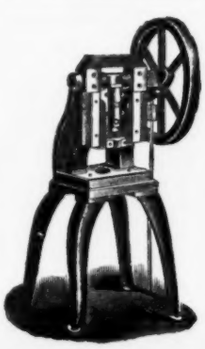

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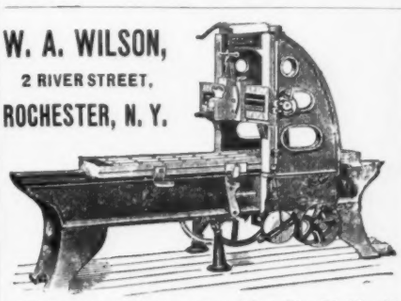

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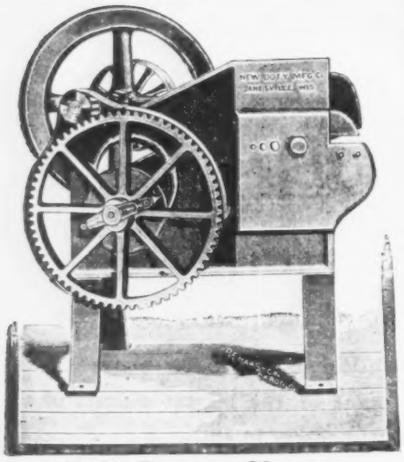

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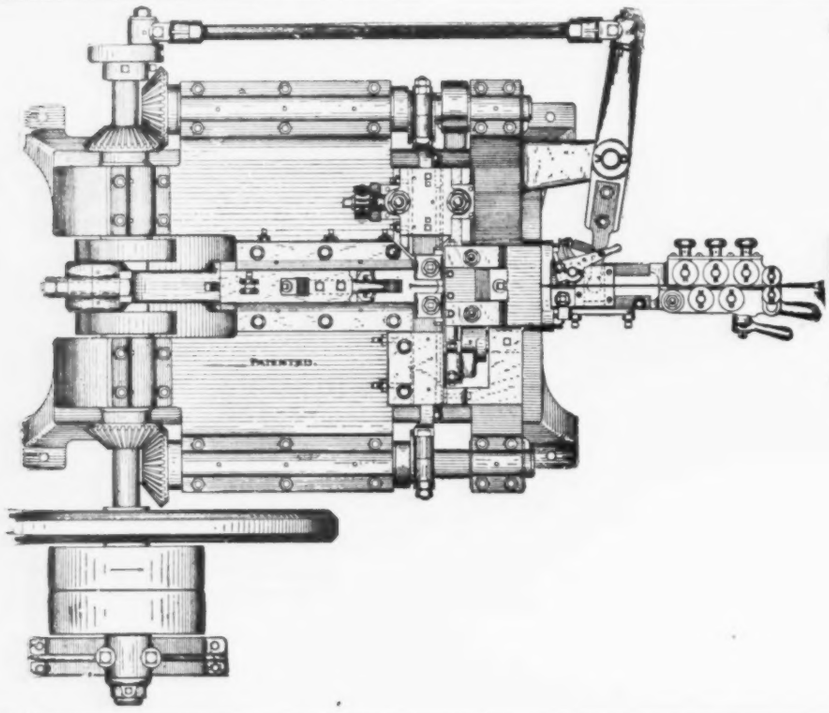

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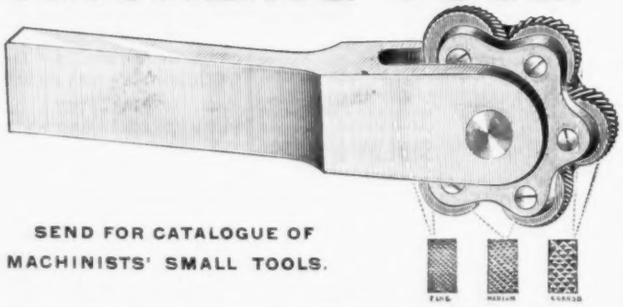

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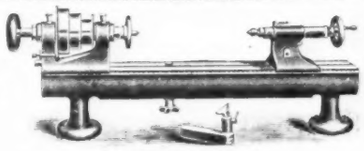

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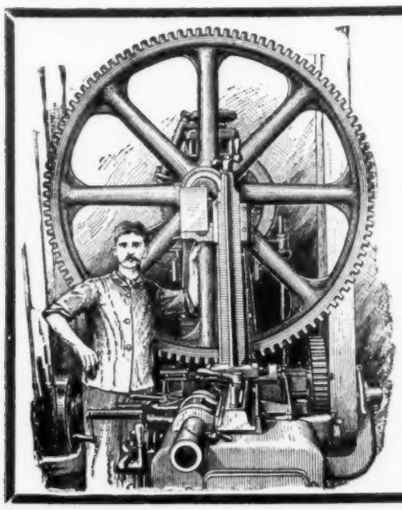

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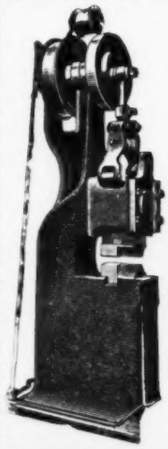

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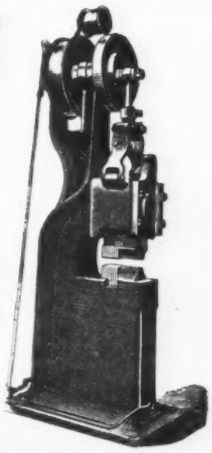

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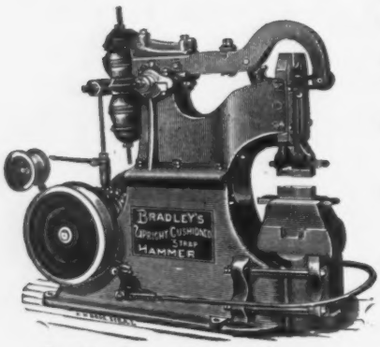

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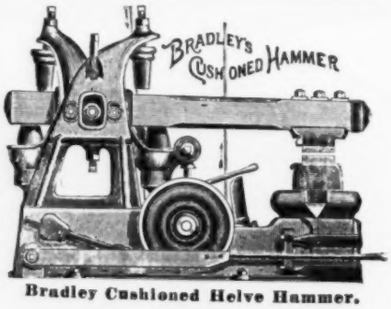

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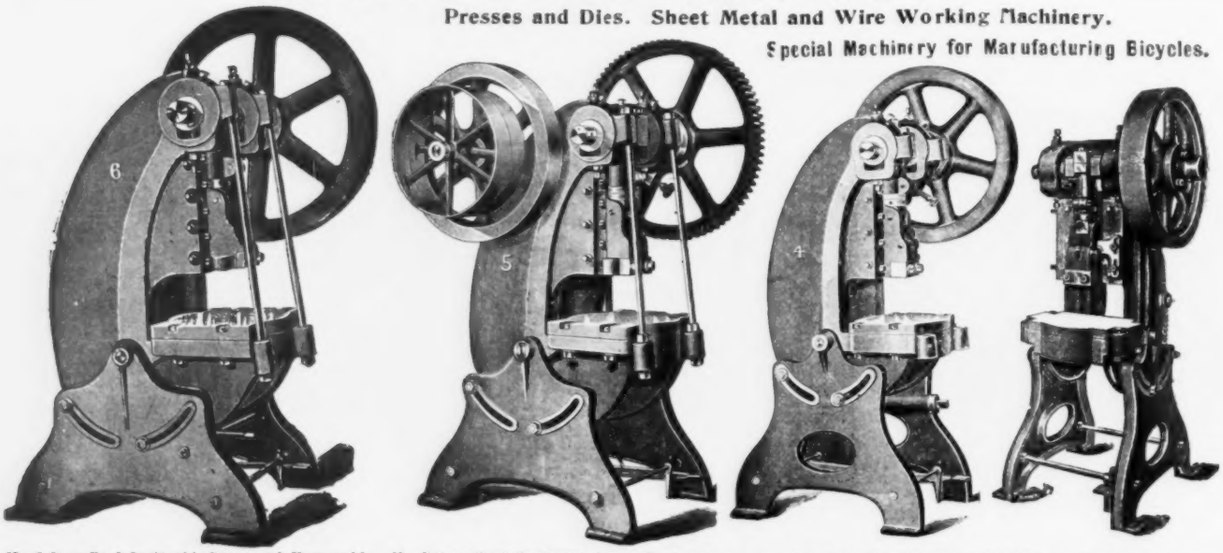

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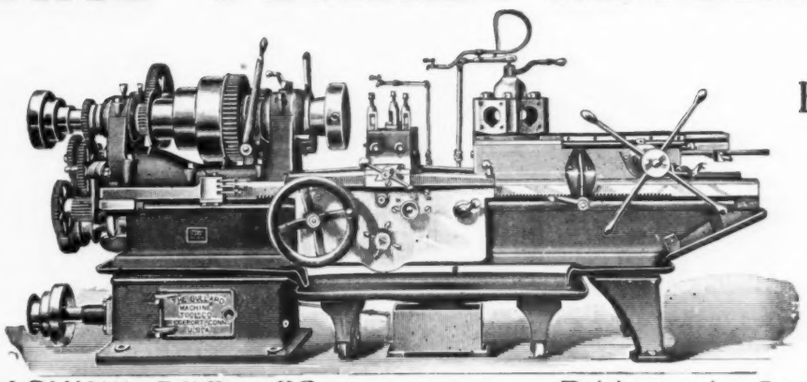

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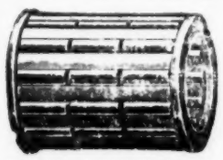

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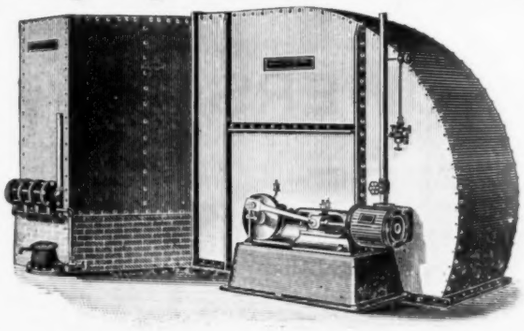

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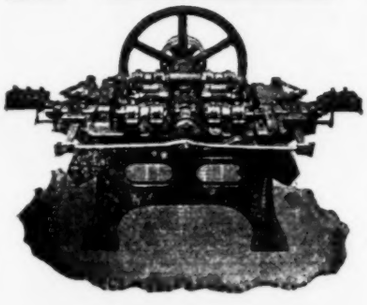

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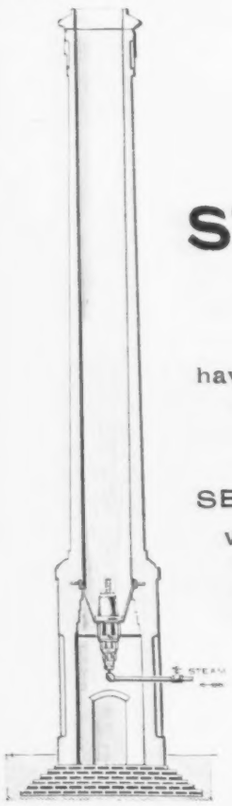

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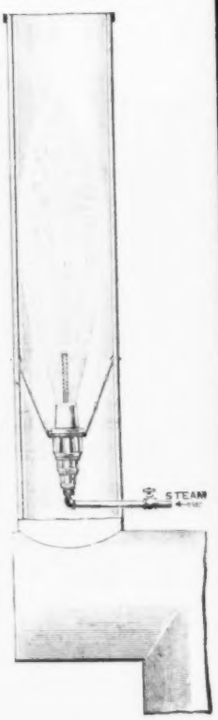

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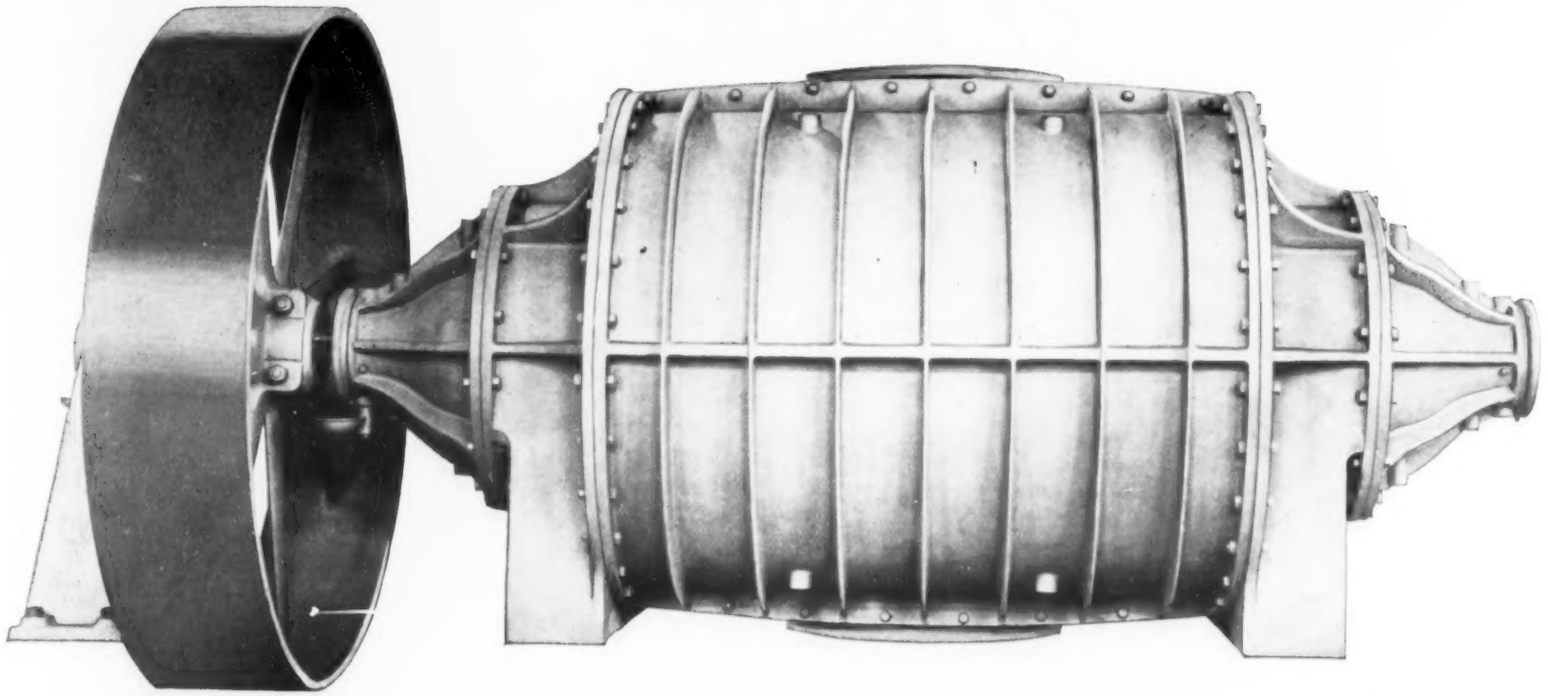

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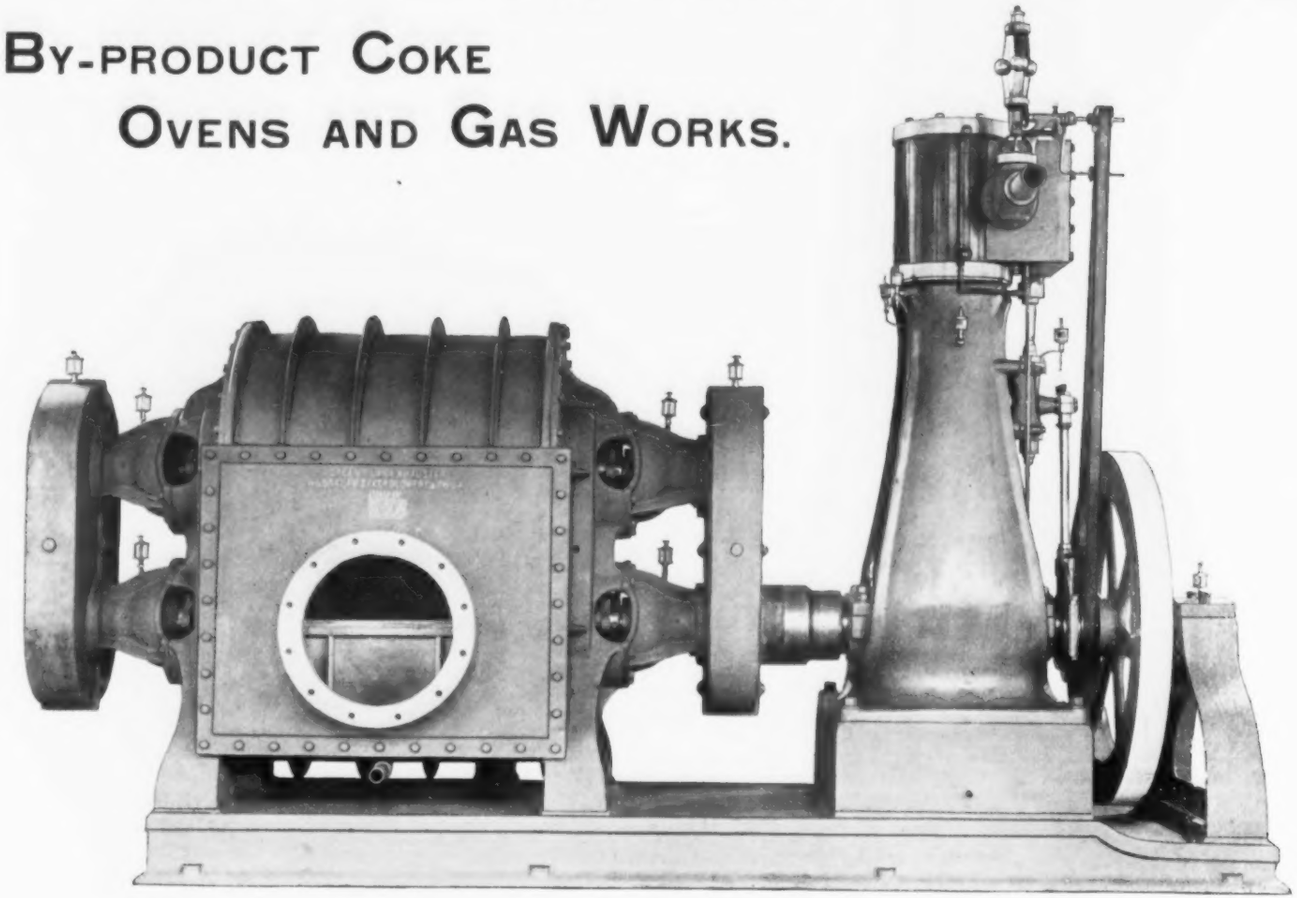

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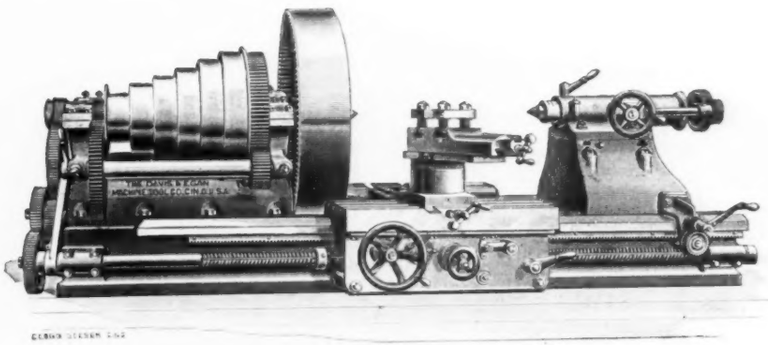

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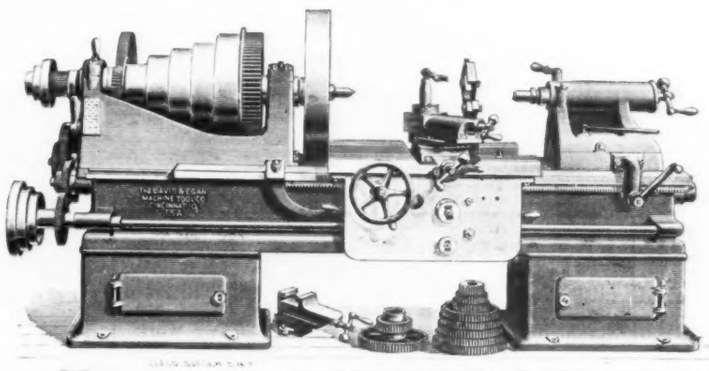

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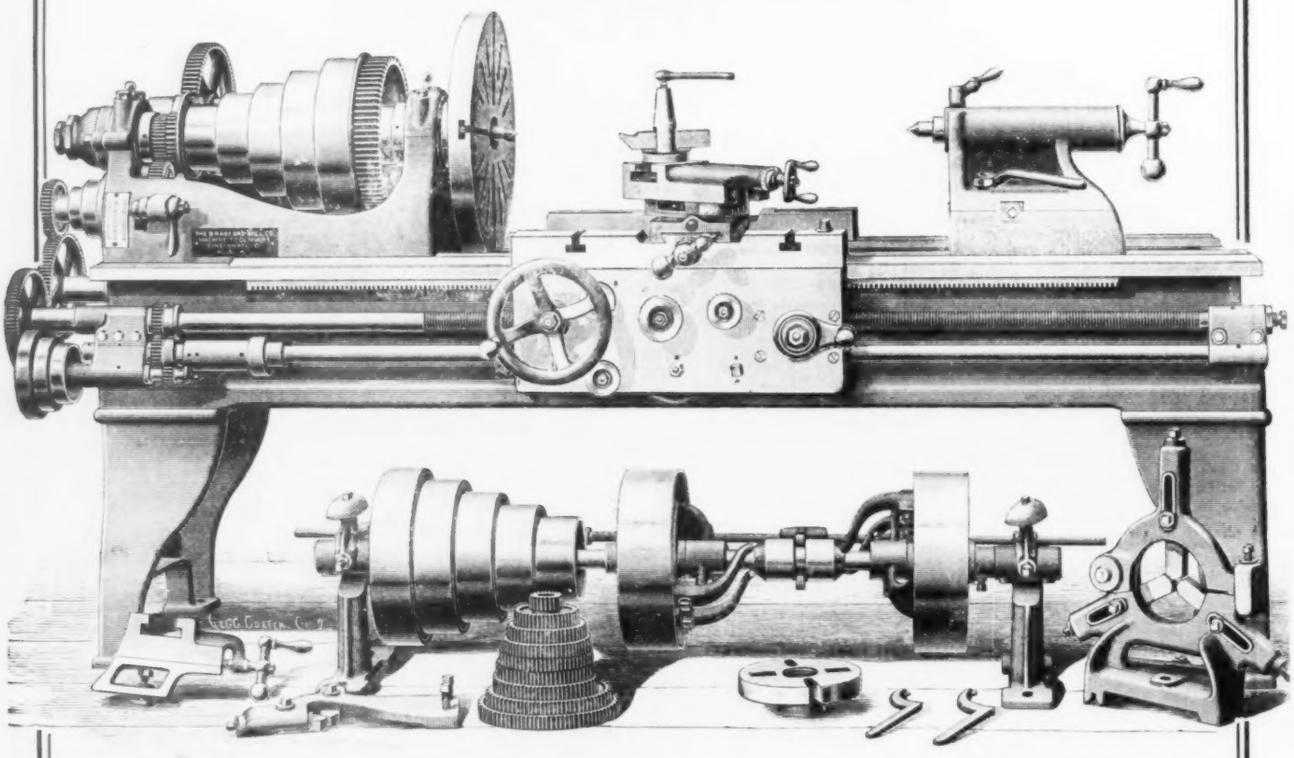

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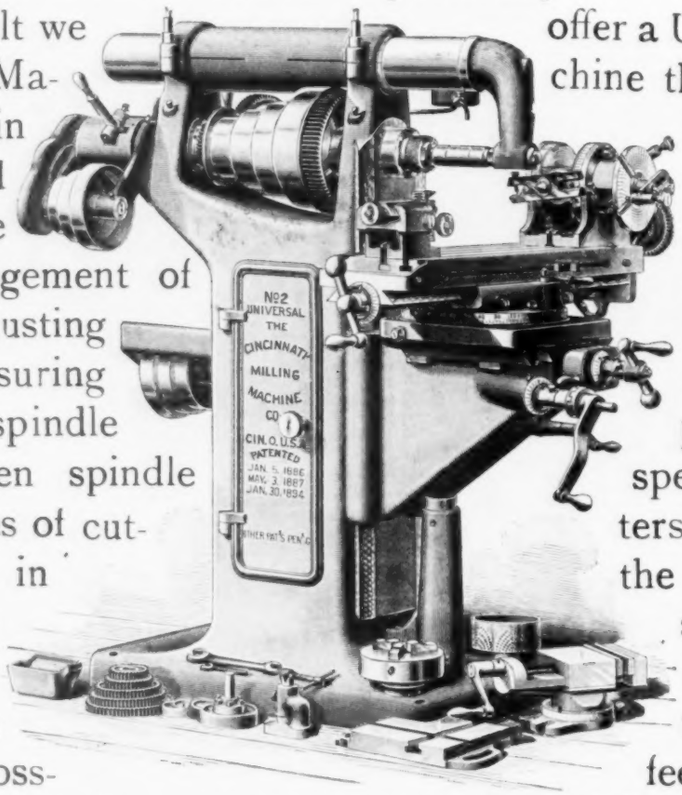

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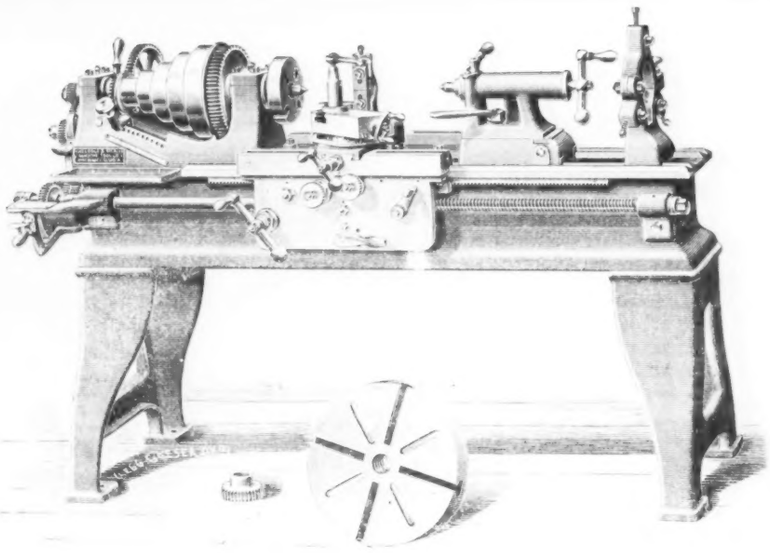

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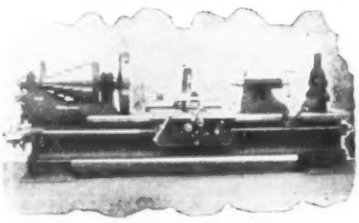

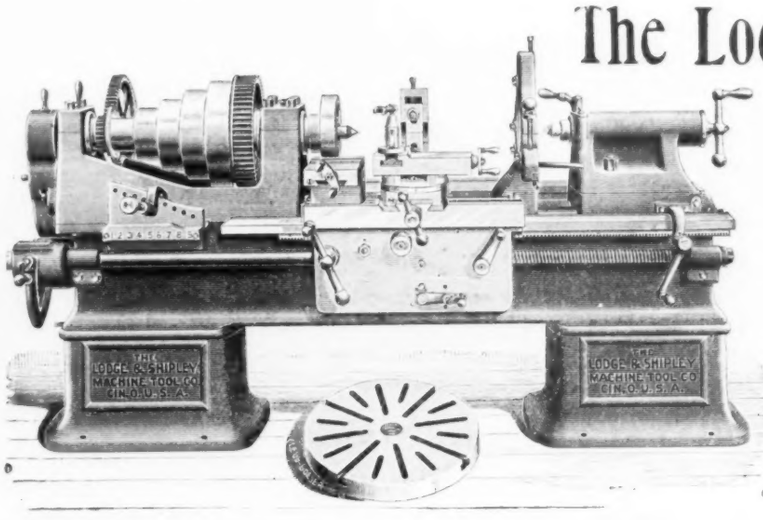

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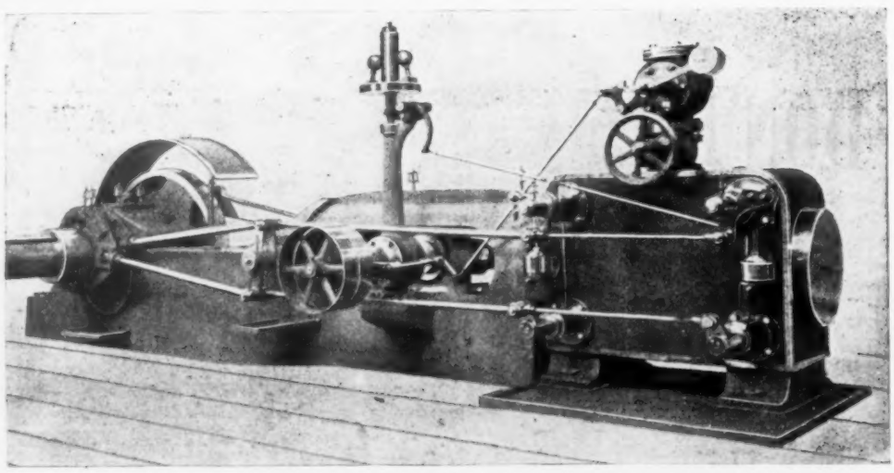

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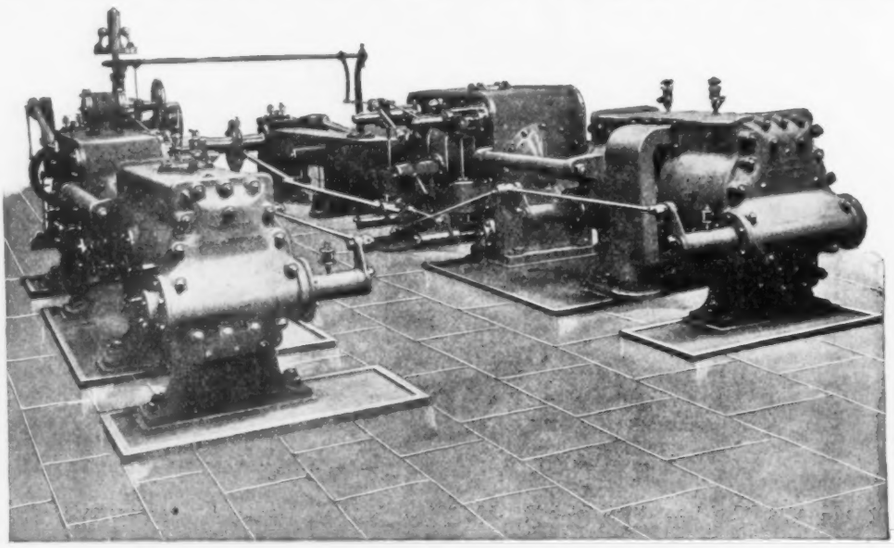

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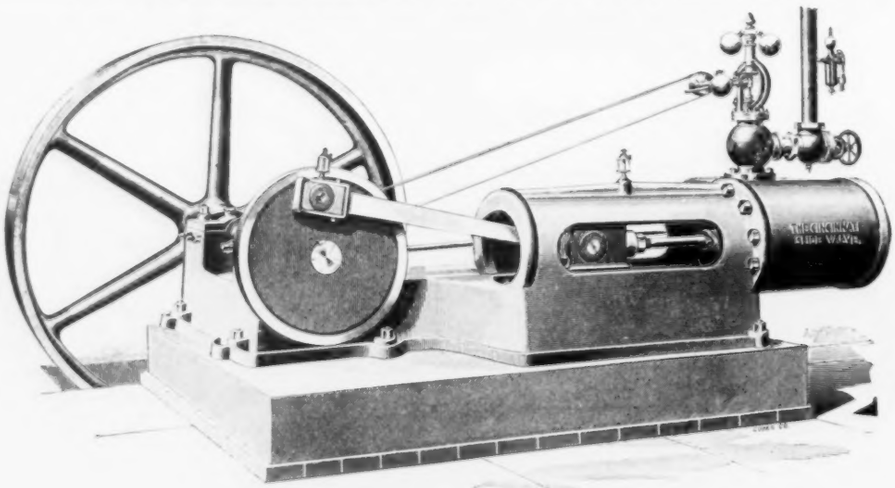

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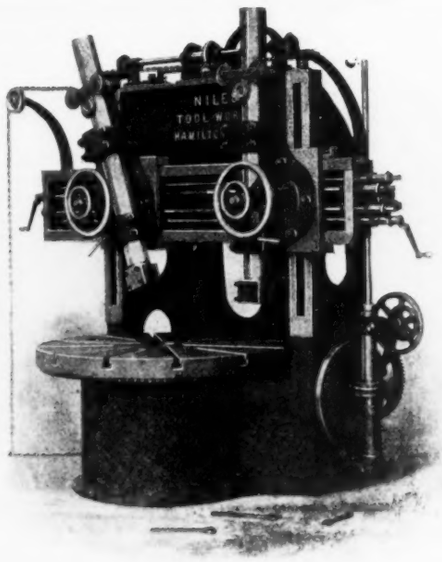

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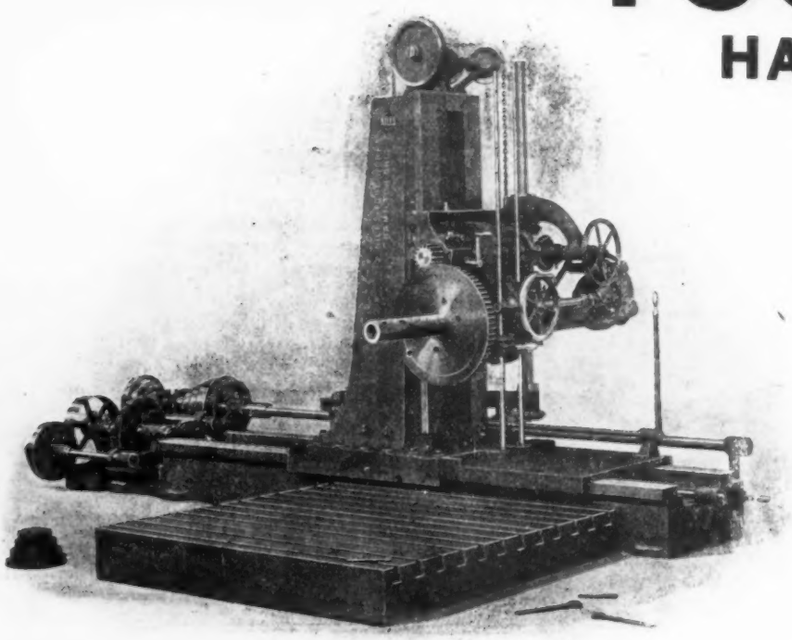

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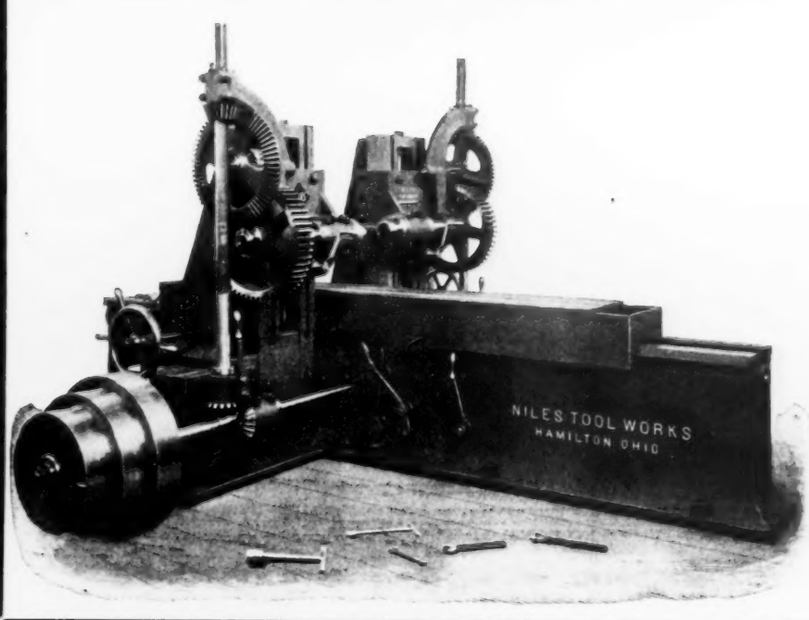

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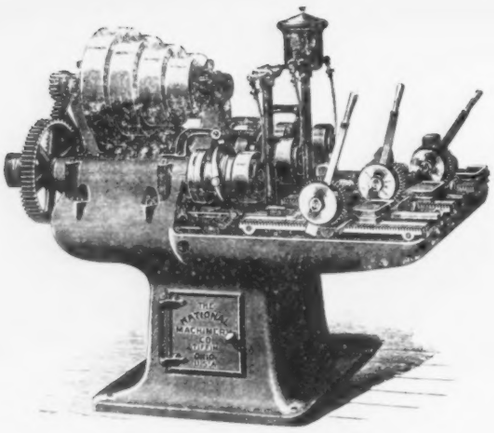

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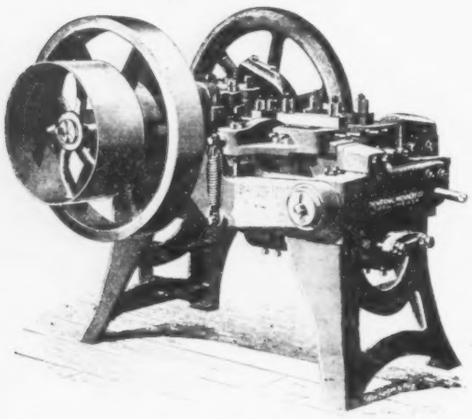

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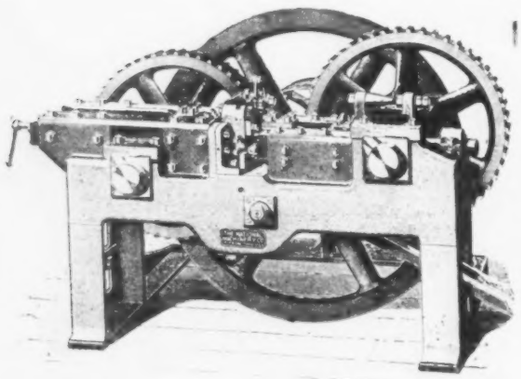

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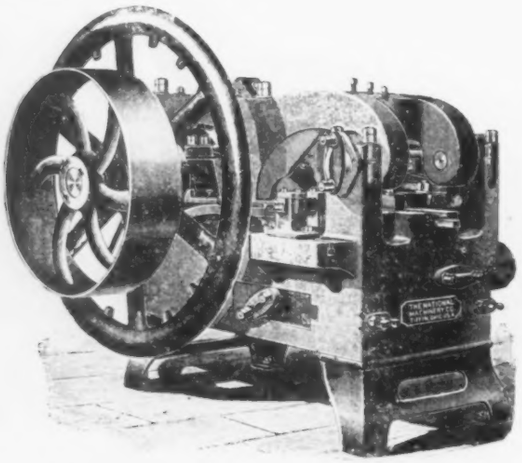

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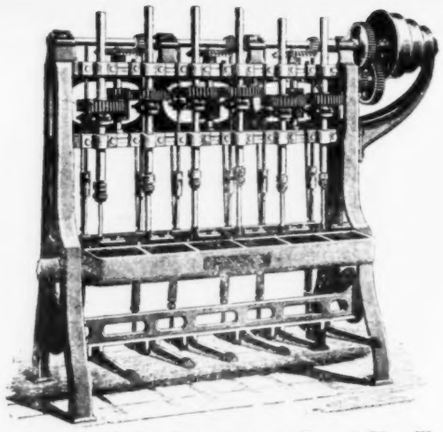

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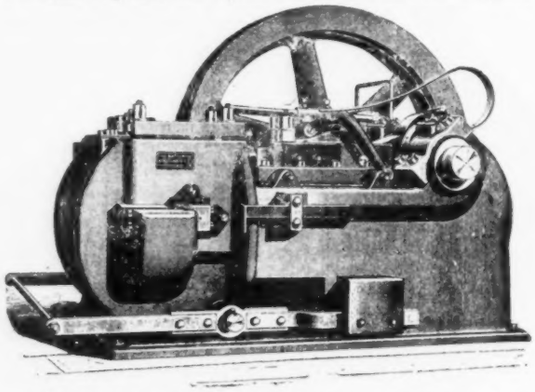

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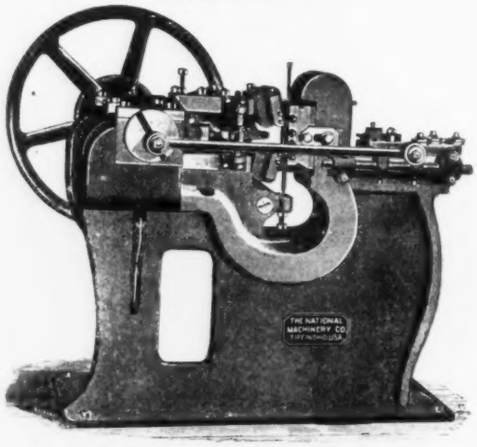

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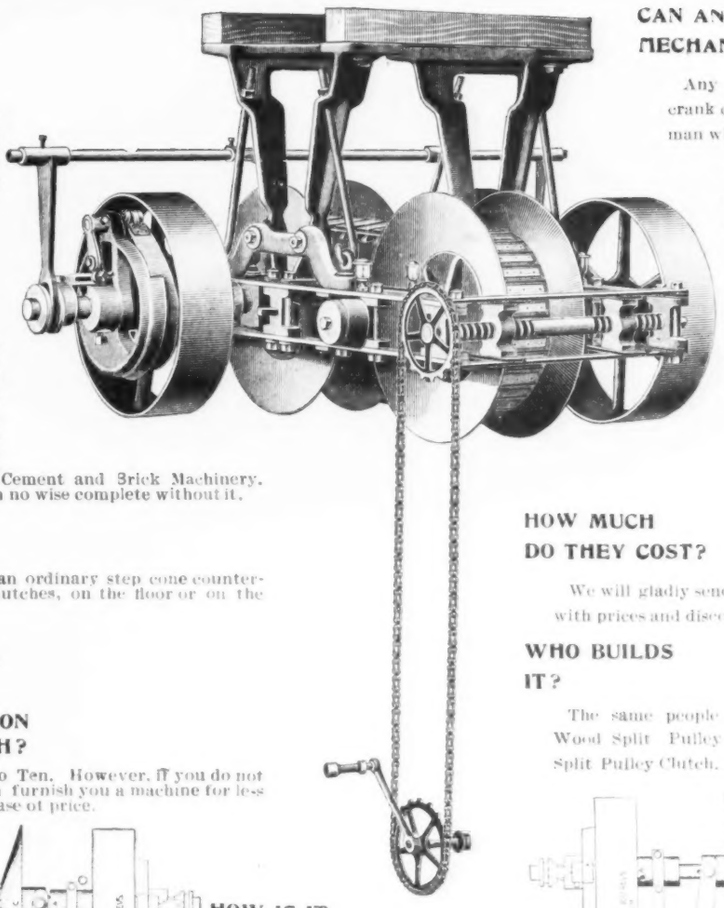

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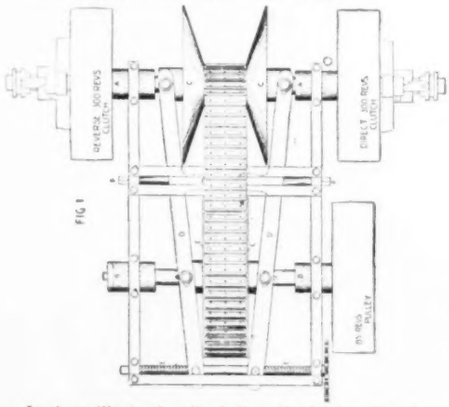

FIG. 1

In above illustration, the belt on the driving discs has assumed its smallest diameter and the driven shaft is propelled at its lowest speed.

HOW IS IT MADE?

That is just a little difficult to answer in so brief space as we can spare. Kindly refer to the outline cuts and briefly we will explain:

The shaft upon which the clutches are mounted, we shall call the driver. This shaft always runs at a uniform speed, and is belted direct from the line shaft. The other shaft mounted parallel with the first is the driven. The novel feature of the mechanism is the two sets of split mounted discs. One disc of each set is attached to a common pivoted straight bar, which bar is operated upon by a screw in such manner as to bring together one set of discs as the other set is forced apart.

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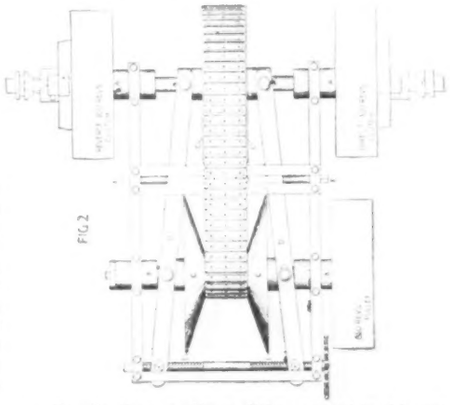

FIG. 2

Exactly the opposite conditions prevail in this cut, and the driven shaft is propelled at its greatest speed.

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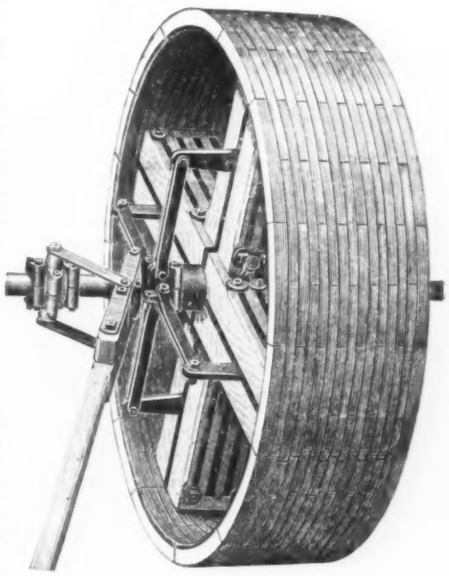

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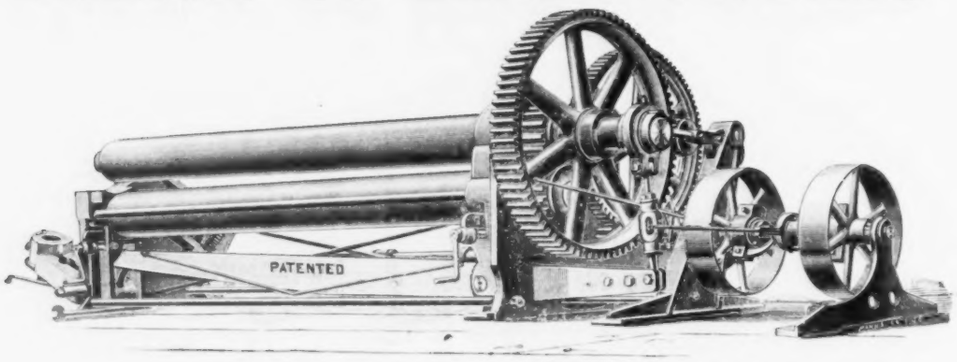

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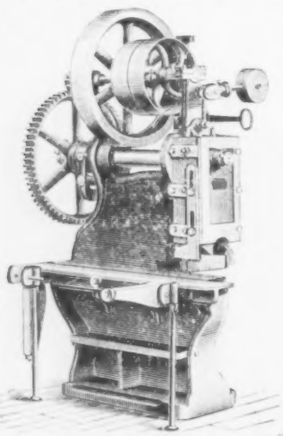

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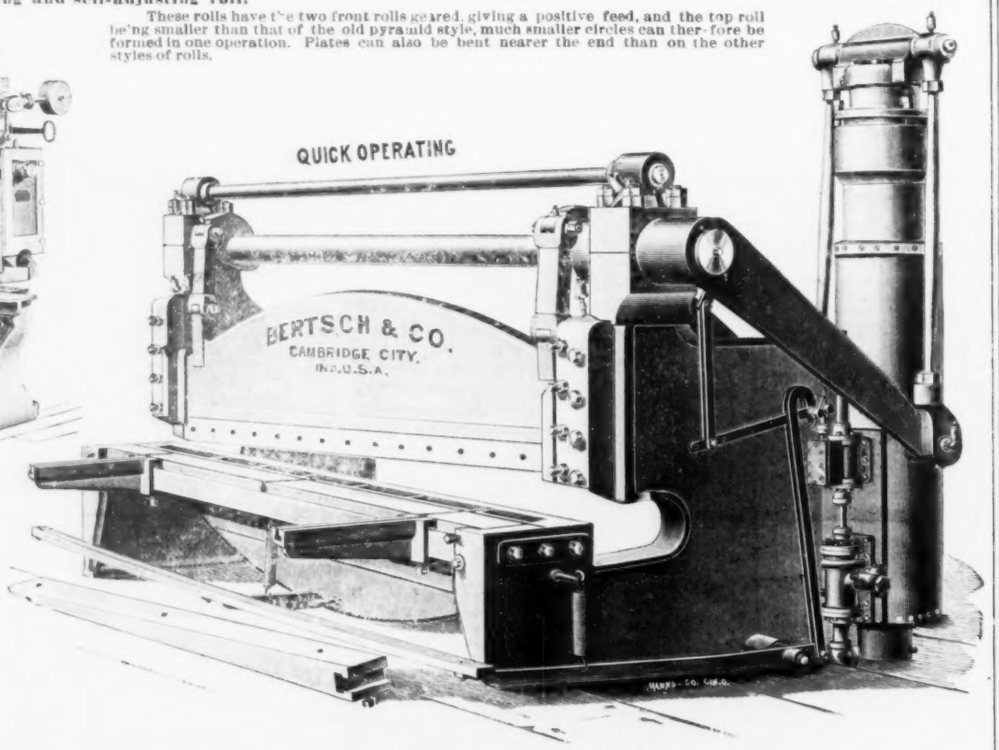

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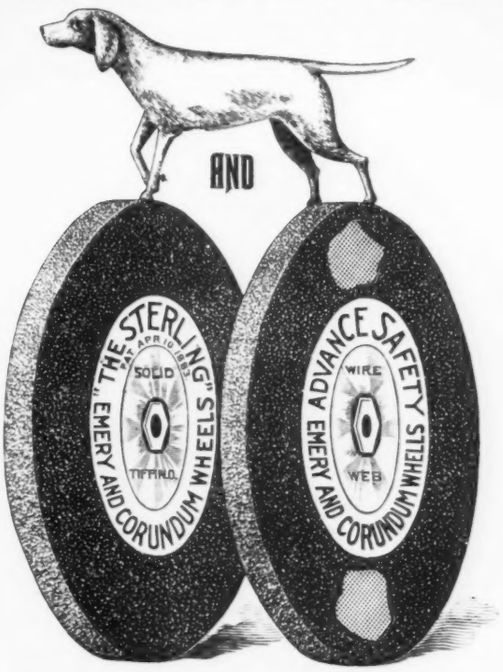

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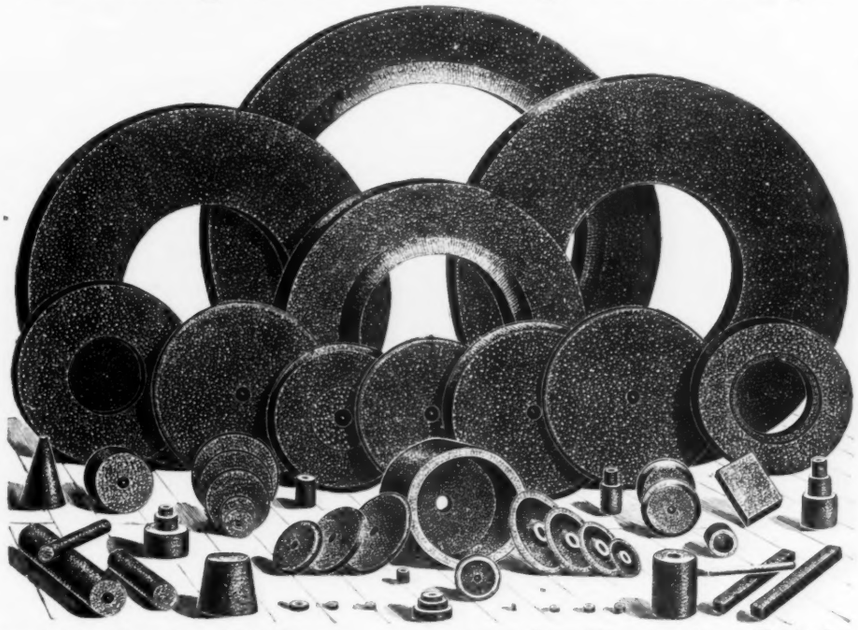

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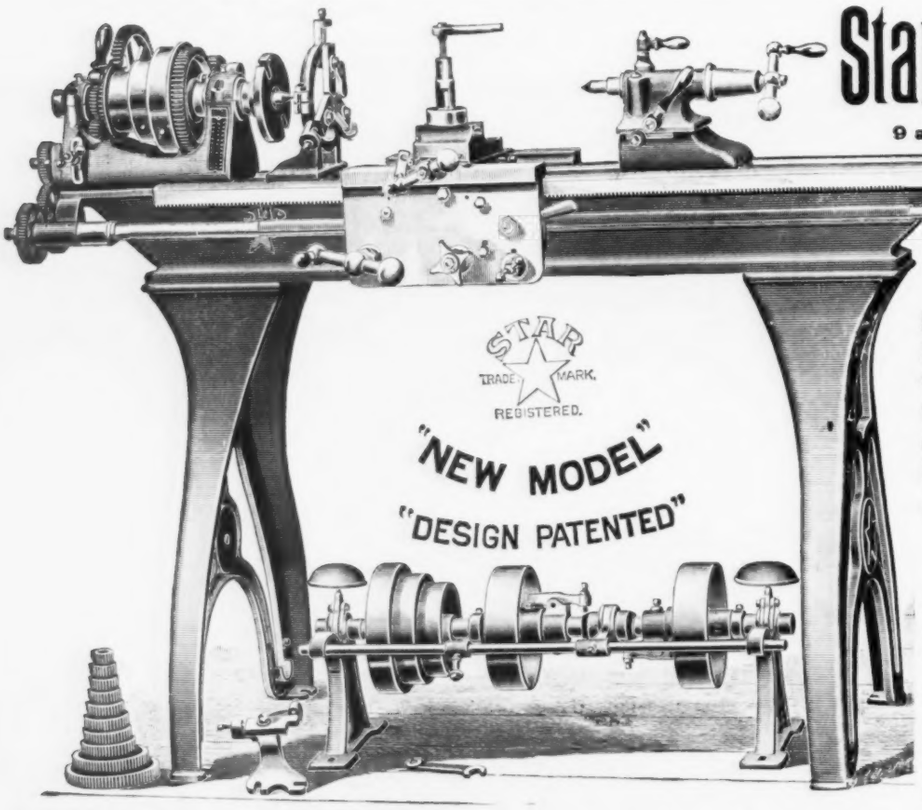

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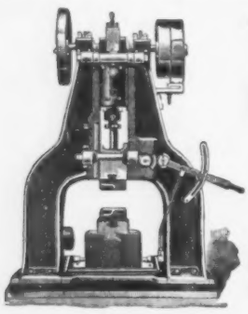

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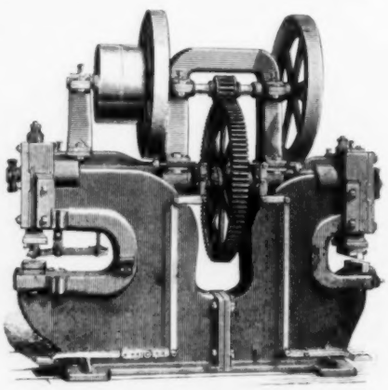

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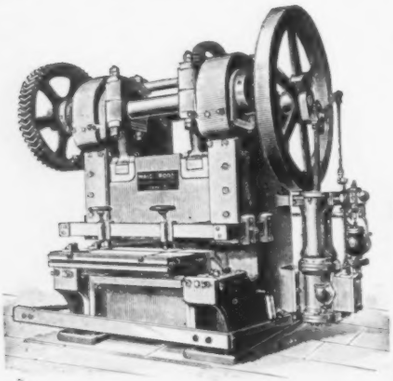

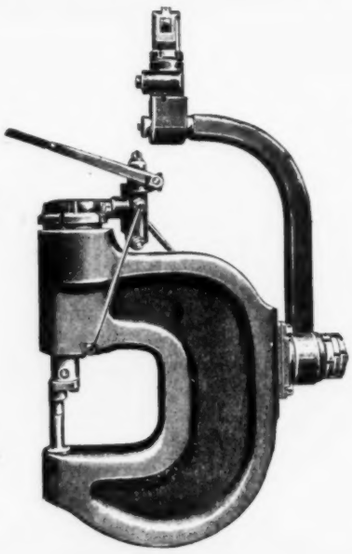

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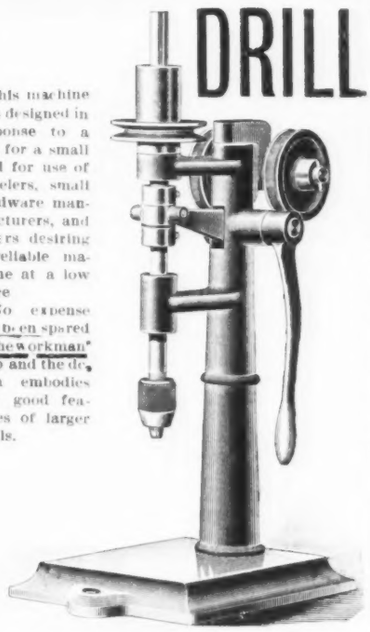

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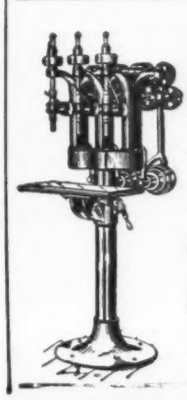

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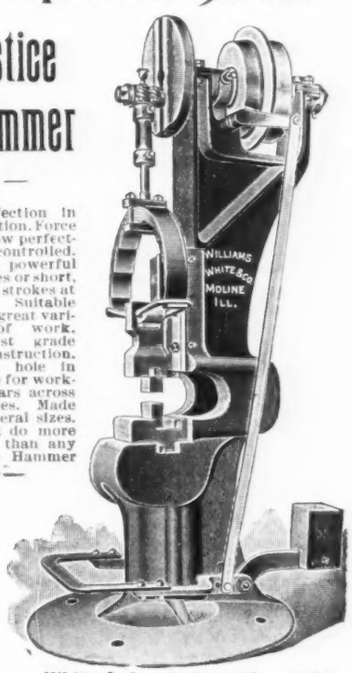

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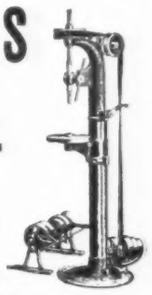

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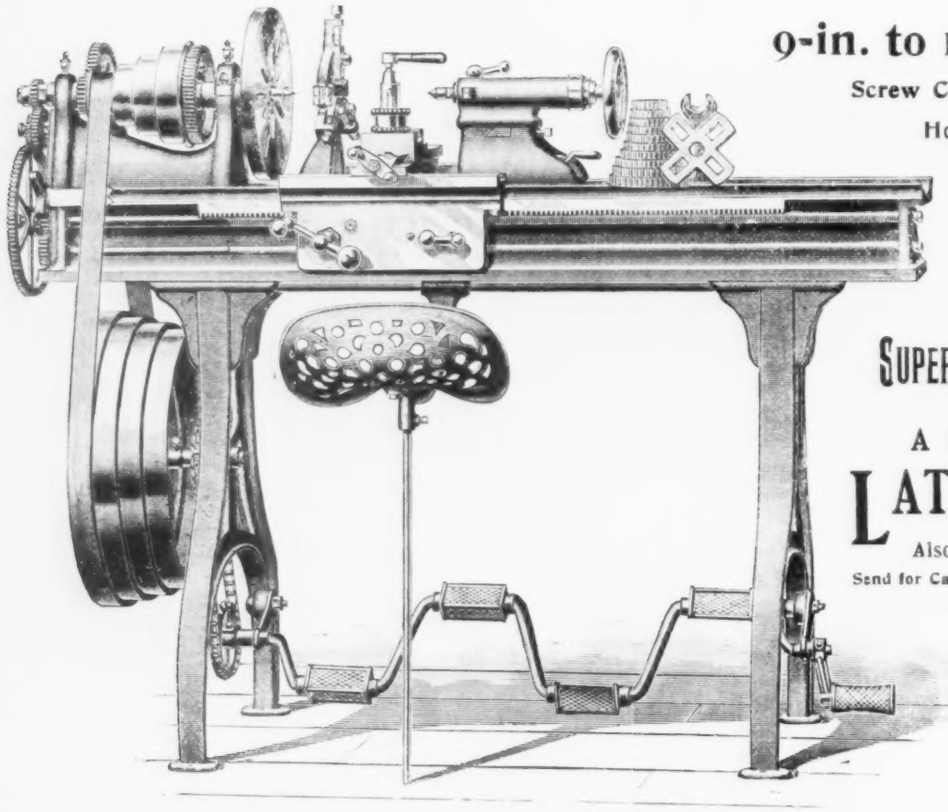

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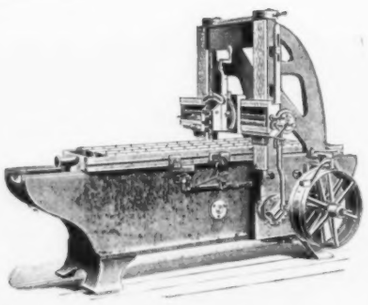

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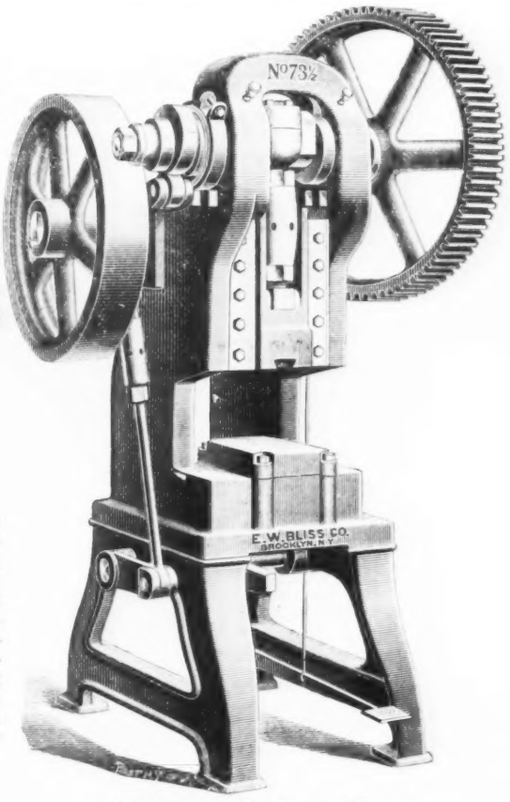

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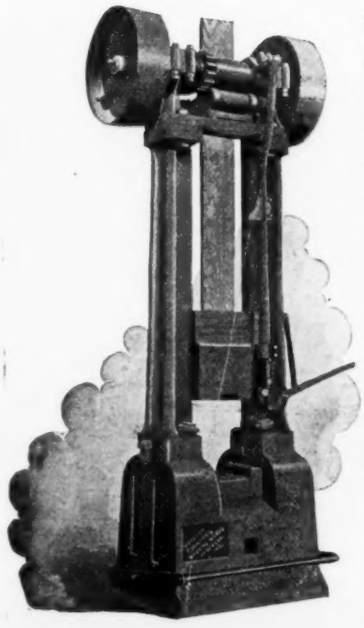

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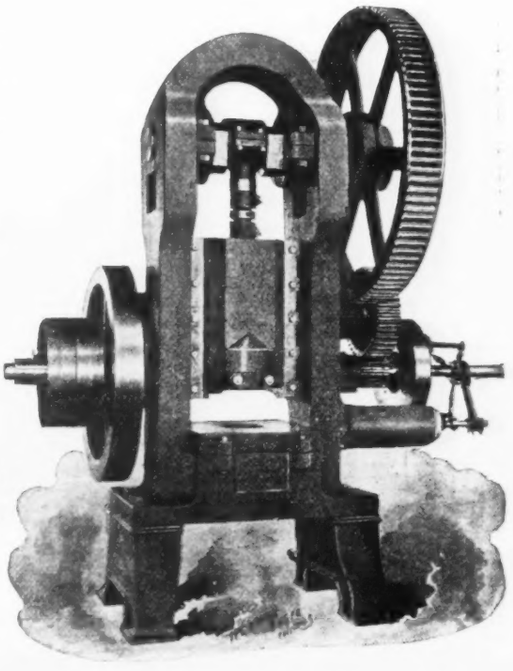

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SELF-OPENING AND ADJUSTABLE.

Save 50 per cent. over solid Dies.

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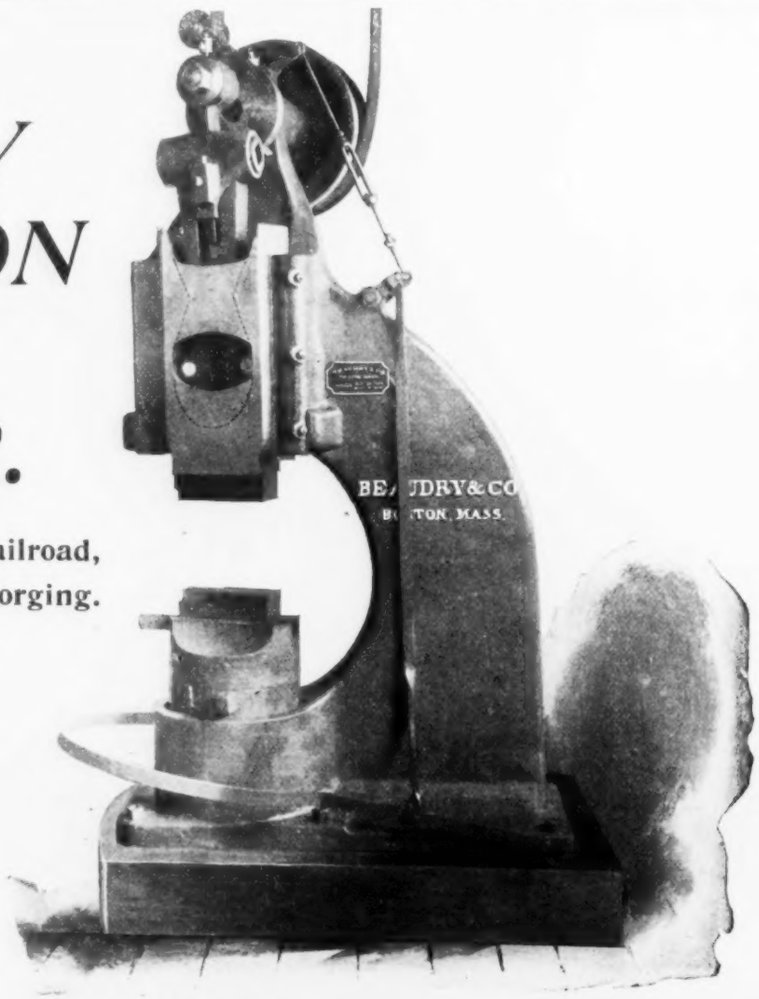

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PLAIN AND AUTOMATIC DROP PRESSES.

We Manufacture

20 sizes of Punching Presses.
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6 " " Foot Presses.
4 " " Screw Presses.
3 " " Sensitive Drills.
20 " " Rolling Mills.
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"Automatic Drop Presses"

are what live manufacturers want—Drop Presses that can be operated by **inexperienced labor.** The past year we have sold more **Automatic Drop Presses** than ever before, which shows that manufacturers are appreciating their use.

Write us, stating what you are now doing on the old style Plain Drop, and let us tell you what we can do for you on Our **Automatic Drop Presses.**

DROPS

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50 to 1,000 lb. Hammers for Prompt Shipment.

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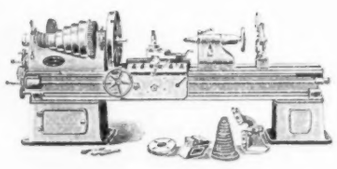

Start the New Year

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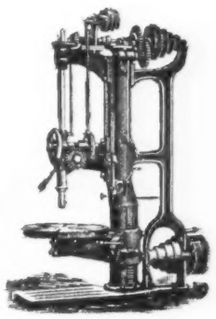

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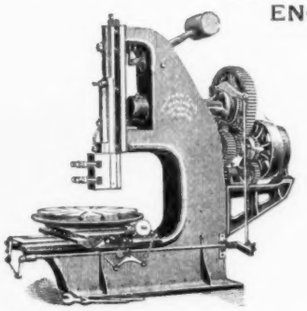

All Machines carefully and thoroughly tested before shipment.

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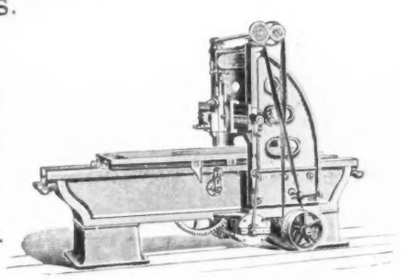

27-in. Swing x 12 ft. Bed Screw Cutting Lathe.

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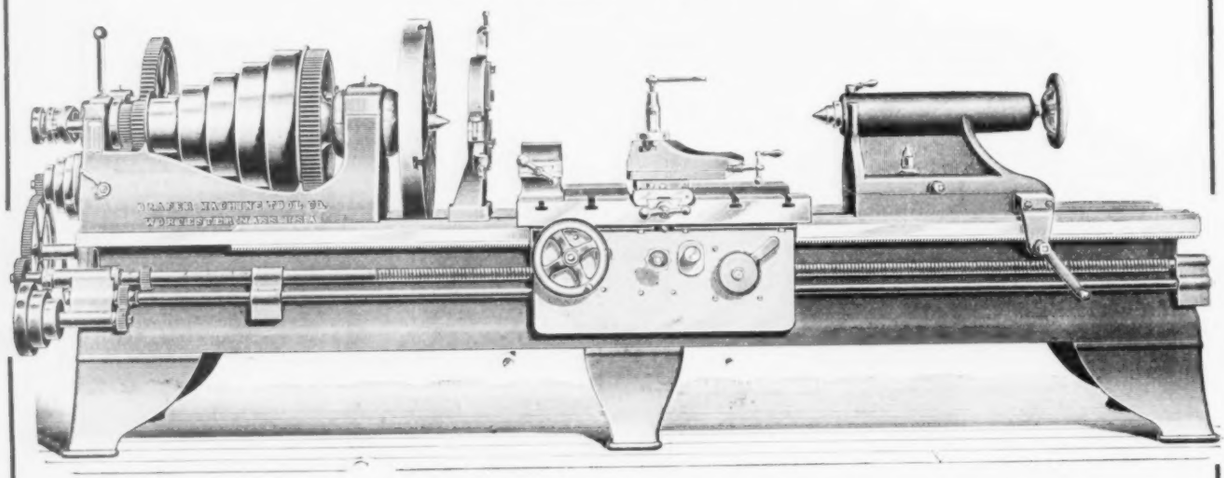

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From 14 in. to 42 in. Swing.

CHUCKING LATHES,
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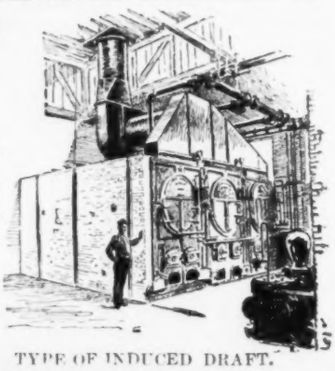
INDUCED OR FORCED.

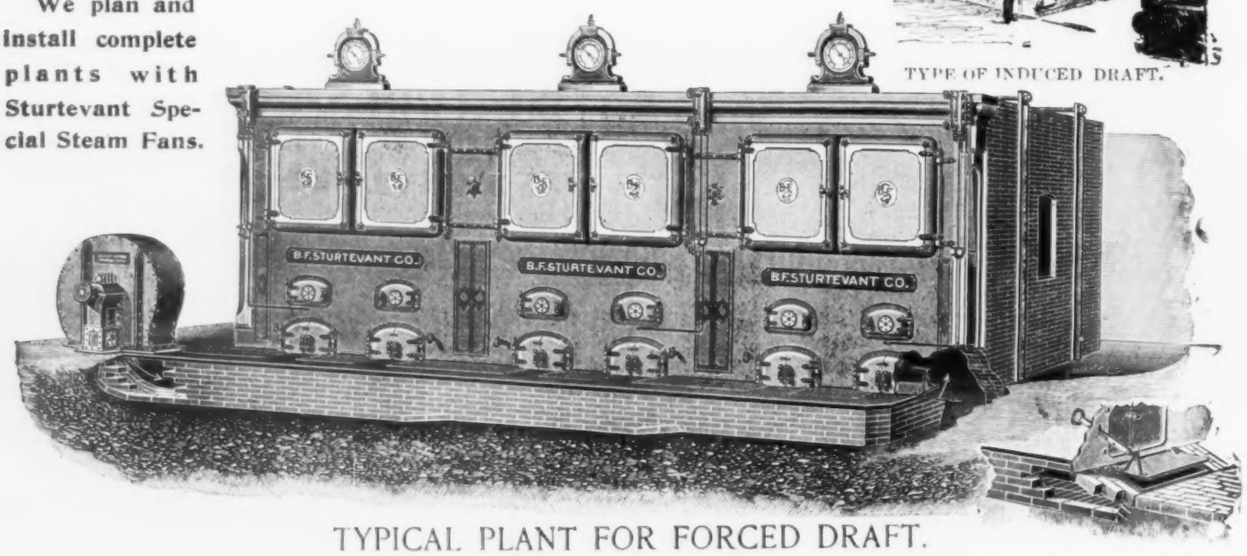
A very satisfactory arrangement when properly installed, and by using cheap coal great saving can be made in Fuel Bills.

Has the advantage of close regulation as well as the greatest variation in draft when called for.



TYPE OF INDUCED DRAFT.

We plan and install complete plants with Sturtevant Special Steam Fans.



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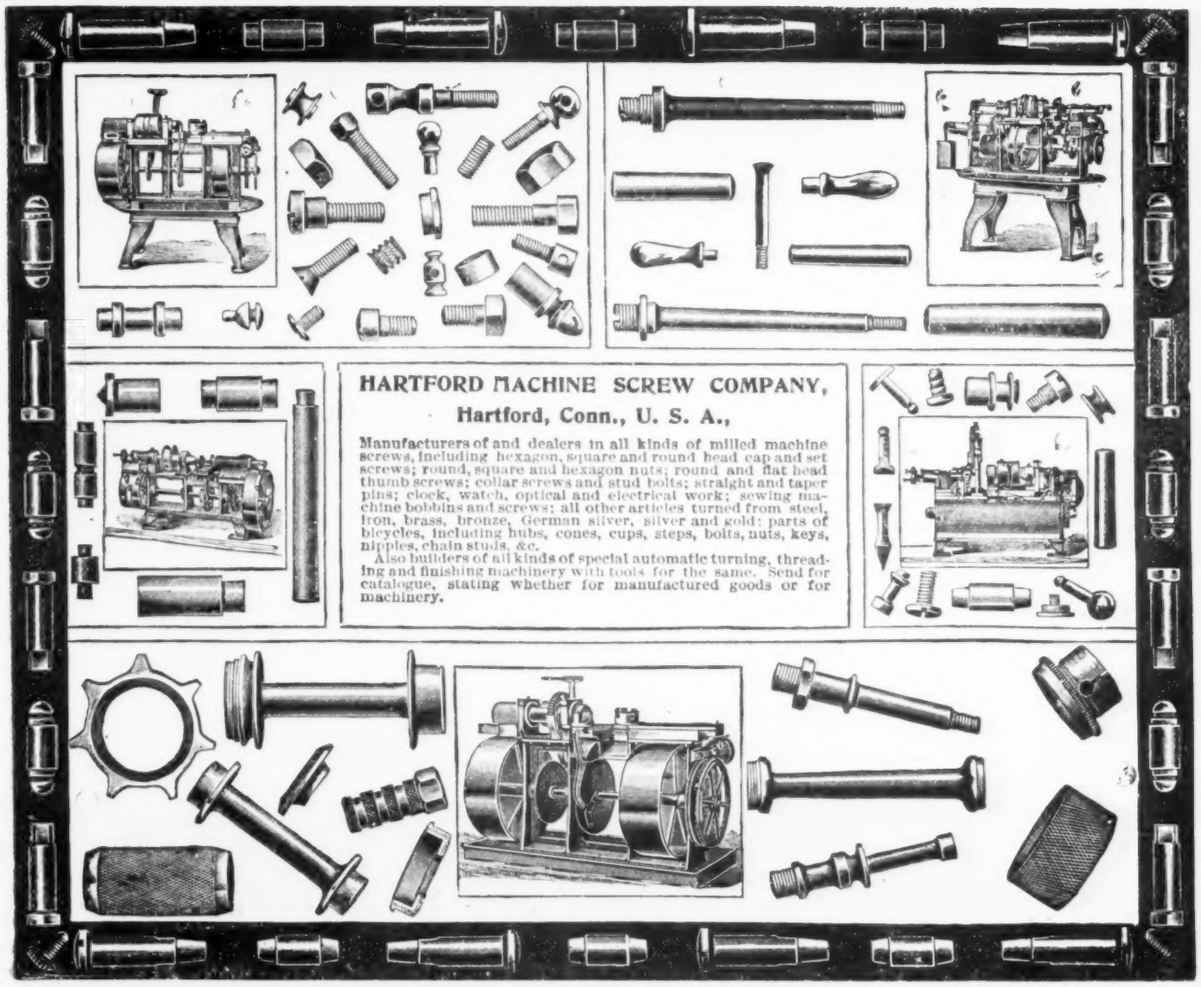

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Established 1872 : : Incorporated 1898

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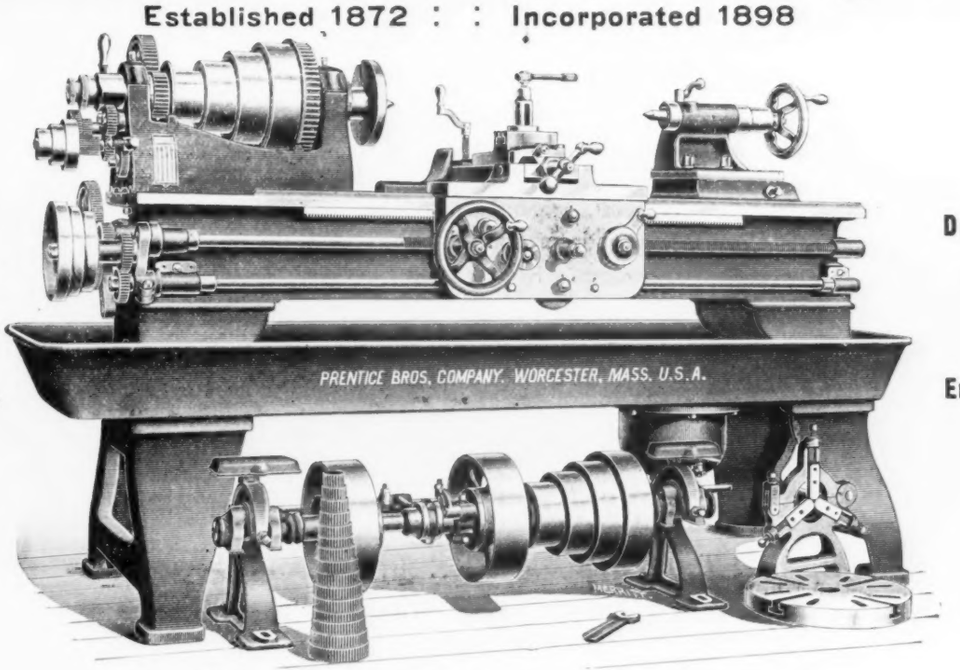

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With or Without

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Rolled threads on wire and screws are quite as satisfactory in most cases as cut threads, and cheaper by far.

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Standard Gauges.

Standard Internal and External Cylindrical Gauges for accurate measurements.

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Standard End Measuring Rods with spherical ends form inexpensive reference gauges.

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50 in. x 14 ft. Putnam.
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20 in. x 10 ft. Putnam.
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18 in. x 14 ft. Muller.
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20 in. Prentice, plain.
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88 in. swing, Box Co.'s
5 ft. arm, Niles, plain.
5 ft. arm, do. universal.

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8 ft. Bending Rolls.
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Comb. Punch and Shears
Heavy 24 in. Punch.
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12 in. crank, Prentiss.
15 in. friction, do.
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No. 12 Garvin Table, 27 x 7.
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Morton 24 in. Keyseater.
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ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
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14 in., 16 in. and 22 in. Corliss Engines.

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100, 250 and 350 H. P. Westinghouse Compound Engines.

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16 in., 20 in., 24 in., 36 in., 54 in. and 60 in. Planers.

36 in., 50 in. and 60 in. Radial Drills.

Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

FRANK TOOMEY,
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BOILERS.

3 125 H. P. Loco. Style, 100 lbs. steam pressure.
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1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished.

POULTERER & CO.,
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Brown Automatic Engine, 26 in. x 60 in; Wright Automatic Engine, 24 in. x 48 in.; Wheelock Automatic Engine, 20 in. x 48 in. Steam Pumps, standard sizes, large variety

FRANK McSWEGAN & SONS,
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For Sale.

One 16 in. x 32 in. "Fishkill" Horizontal Corliss Engine, practically new.

Fifty modern engine lathes from 12 to 28 in. swing, built by Flather, Blaisdell, Hendey Norton, Prentice, Ames, etc.

The above tools are second-hand but in first class condition.

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No. 4 Cincinnati Universal Miller, complete.....	$500.
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40 in. New Haven Drill, fitted with Reversing Pulleys.....	275.
34 in Barnes ditto	200
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FOR SALE.
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16 in. to 32 in. stroke.

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SIX SPENCER AUTOMATIC SCREW MACHINES

for sale, for working stock from the coil up to ⅜ in. diameter.

Four years old.

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1 Planer 60 in. x 60 in. x 14 ft. Screw feed, cheap.
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1 50 lb. Upright Belden Hammer.
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1 250 lb., 1 200 lb. Farrell Drop.

Machinery appraised any part of country.

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Plain Milling Machines.

Bement, Table 33 in. x 10 in.
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I have 100 Horse Power Locomotive Boiler, good for 125 lbs. pressure, nearly new, extra large fire box; Round and Square Iron Tanks, all sizes; Boiler Shells for stacks and culverts; Pumps, Upright and Horizontal Boilers, Engines, Blow-off Tanks. All kinds of Scrap Iron and Metals bought.

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One second-hand Punching Machine. Capacity 1⅛ hole in 1 in. plate. Address

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Rather than move the following new and second-hand machines into our new shop, we will make SPECIAL PRICES on them. Write us:

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SHAPER.	No. 2 Fitchburg, Traveling Head.
PLANERS.	24 in. x 24 in. x 6 ft. Whitcomb. 24 in. x 24 in. x 8 ft. Smith-Silk. 26 in. x 26 in. x 8 ft. Putnam.
DRILLS.	20 in. Wheel & Lever Drill. 20 in. Wheel & Lever, B. G. 24 in. B. G. P. F. A. S. 28 in. B. G. P. F. A. S. 32 in. B. G. P. F. A. S. 40 in. B. G. P. F. A. S. 66 in. Gang Radial, B. G. P. F. 1 Henley Swing Drill. 14 in. Aurora Sensitive. 16 in. Sensitive, Flickinger.
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Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
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No. 2 Bardons & Oliver Screw Machine with wire feed.
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1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 Diamond No. 5 Tool Grinder.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear.
Medart Power Shaft Straightening Machine up to 4½ in. shafts.
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2 Jib Cranes, 15 ton capacity.

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65 tons 50 lb. Relaying Rails.
30 Sets Wheels and Axles, 30 in. gauge.
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3 Wagon Scales.
2 Furnace Charging Scales.
2 Railroad Track Scales.
500 ft. 10 in. Cast Iron Pipe.
1 Stand Pipe 4 in. diam. x 60 ft. high.
6 Steam Pumps.
Boiler 52 in. x 15 ft. 8 in., 28 4 in. tubes.
Engine, 10 in. bore x 13 in. stroke.
Planer, 37 in. x 37 in. x 15 ft.
23 Grindstones, 12 in. face x 6 ft. diameter, mounted.
Set Whitworth Male and Female Gauges.
Large lot other machinery and tools.

C. R. BAIRD & CO., Pig Iron,
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Second-Hand Tools.

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- 1 15 x 5 Bullard.
- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 10 Lodge & Barker.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 20 x 8 Lodge & Barker.
- 1 18 x 10 Sheppard.
- 1 18 x 10 Steptoe McFarlan.
- 1 19 x 7 Lodge & Davis.
- 1 20 x 8 Pond.
- 1 20 x 0 Porter.
- 1 24 x 12 Hatfield.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.
- 1 32 x 32 x 12 Fitchburg.

DRILLS.
- 1 13 in. Sensitive Drill.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 4 ft. Plain Radial Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 12 in. Smith & Mills.
- 1 15 in Steptoe
- 1 15 in. Betts Traveling Head.
- 1 26 in. Friction.

SCREW MACHS.
- 1 ⅜ Screw Machine.
- 1 1¼ Screw Machine.
- 1 1½ Screw Machine.
- 1 2⅛ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1¼ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton K-yseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ¾, 1⅛, 1½ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
13, 14 and 15 in Hand Lathes.
1¾ in. and 2 in. Automatic Bolt Cutters.

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Successors to THE DAVIS & EGAN M. T. CO.,

CINCINNATI, OHIO, U. S. A.

READE & BOWLER

desire to sell the remaining tools and shop equipment at **The Harrisburg Car Mfg. Co., Harrisburg, Pa.,** and will make such prices as will move this outfit. Address all inquires to

READE & BOWLER,
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SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ½, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in x 16 in.
Horisontal Engines, 6 in x 6 in., 7 in. x 10 in., 8 in x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100 Horse Boilers good for 90 lbs., $350 each. Numerous machines not mentioned for want of space

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FLY WHEELS.

One 11 foot, in halves. 10 tons weight. One 8½ foot 50 lb, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

Combined Punch and Shear.

Made by Bement. Fine order.

Two Bolt Headers.

One Oliver Bros. & Phillips make. One Abbé. Both in fine order.

Double Punch.

By Bement.

For Sale at Bottom Prices.

THOMAS P. CONARD,
119 So. Fourth St., Philadelphia, Pa

FOR SALE.

2 Vertical Boilers, 400 H. P. each, steam 125 lbs.
1 " " 250 " " " 100 "
24 42 x 48 cross Compound Wright Engine.
2 40 x 36 " " " "
2 Tandem compound Wright Engine.
20 40 x 36 Corliss Engine.
1 Double tandem compound Wright Corliss Engine, 1000 H. P.
26 x 60 Corliss Engine.
250 H. P. compound Westinghouse Engine.

MARVIN BRIGGS,
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One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes
31 x 108 in Plate Mill, Roughing Rolls, 28 x 84 in., live tables.
1 10 in. Plate Shear.
Pair 36 x 40 in. Horizontal Reversing Engines.
1 18 in. 3-high Bar Mills.
2 10 in. 3-high Bar Mills.
Engines, Shears, Roll Lathes, 20 Boilers.
Blowers.
10 ton Locomotive Crane 4 ft., 8½ in. gauge.
2 ton Locomotive Crane 4 ft., 8½ in. gauge.
Supply and Hydraulic Pumps.
Large lot of other machinery such as used in a large steel works

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150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.
4 13 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

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30 x 36 in. Vertical Corliss Rolling Mill Engine with 20 ton wheel, one billet shear with engine attached, one heavy bar shear with engine attached, one No. 22 Carlin Shear. We manufacture grinding pans for steel works, chemists, etc.; boilers, steam pumps, hoisting engines and skull breakers.

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Second-Hand Machinery.

Engine Lathes.
13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines
No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2¼ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 20 ft., 3 heads.

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9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

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24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
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We have named above only our choicest tools. Write us for anything you want. Prices on application.

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1 No. 1 Cincinnati Universal Miller, power feeds, latest pattern.
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3 Garvin Lincoln Pattern Milling Machines.
1 Ames Lincoln Pattern Milling Machine.
1 Pratt & Whitney Cam Milling Machine.
1 Special Rim Milling Machine.
1 Beaman & Smith Duplex Milling Machine, fine condition.
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1 No. 2 Becker Miller with Rotary Table.
2 No. 5 Becker Vertical Millers with automatic feeds, fine condition.
1 No. 3 Hilles & Jones Vertical Miller, 26 in. table.

Agents for Cincinnati Milling Machine Co.
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Send for January list of new machinery.
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FOR SALE, CHEAP.

1 24 x 48 Corliss, with 18 ft. Band Wheel, 40 in. face.
1 16 x 42 Corliss, with 7 ft. Band Wheel, 17 in. face, 12 ft. Fly Wheel.
1 54 in. Bement Boring Mill.
1 42 in. Radial Drill.
1 12 in. Bement slotter.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
50 in. Niles Pulley Lathe.
50 in. x 20 ft. Fifield.
48 in. x 20 ft. Sellers.
28 in. x 27 ft. Fifield.
28 in. x 22 ft. Putnam.
27 in. x 10 ft. Davis & Egan
24 in. x 20 ft. Fifield.
20 in. x 12 ft. Porter.
18 in. x 10 ft. Bradford
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.

17 in. x 17 in. x 4 ft. Putnam Planer.
30 in. x 30 in. x 6 ft. Putnam Planer.
27 in. x 27 in. x 8 ft. Smith-Silk Planer.
Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
12 in. x 5 ft. Turret Lathe.
40 in. B.G.F.F. Drill, Lodge & Davis.
No. 3 Power Press R. & K.
No. 3 Garvin Milling Machine.
15 in. Wolcott Shaper.
No. 4½ B. G. Garvin Miller
8 x Jones & Lamson Screw Machine.

Also full line latest improved new machine tools.

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SECOND-HAND MACHINERY.

Lathes.

60 x 15 ft. 6 Lincoln.
20 x 18 Wilmarth.
20 in. Pit
31 x 20 Gay & Silver.
18-50 x 15 Gage.
24-50 x 26 Gap.
30-38 x 24 N. Y. Steam E. Co.
30 x 24 New Haven.
26 x 8 Pond.
24 x 10 Betts.
21 x 12 Wright, R. & F.
19½ x 12 Pond.
20 x 8 N. Y. Steam E. Co.
18 x 12 Lodge & Davis.
17 x 10 Pratt & Whitney.
16 x 8 Robbins.
16 x 6 Bullard.
15 x 6 Prentice Bros.
14 x 6 Flather.
13 x 6 Sebastian May.
12 x 5 Star.
2 15 x 5 ft. 6 American T. & M. Co. sq. arbor fox, B. Grs., slide rest.

Planers.

16 ft. Hilles & Jones, plate
66 x 60 x 16 Waterbury.
36 x 36 x 10 Putnam.
32 x 32 x 8 L.W.Pond, fine
30 x 30 x 6 Planer.
26 x 26 x 8 Putnam.
25 x 25 x 6 Sellers.
24 x 24 x 6 Powell.
20 x 20 x 5 Newton.
16 x 16 x 12 Whitcomb.
Also number of Stone Planers.

Screw Machines.

No. 3 Windsor, pla'n, fine.
No. 3 B. & S., wire feed.
No. 2 Prentiss, plain.
Cleveland Automatic.

Milling Machines

No. 3 Cincinnati univ.
No. 1 Cincinnati univ.
No. 1 B. & S. univ.
Newton power.
4 Ames Lincoln pat.
Providence, Lincoln pat.
No. 5 Garvin, plain.
No. 0 Van Norman, duplex
No. 1 Garvin, hand.

Drills.

36 in. Pond, B. G'rd.
34 in. Bickford, plain.
26 in. Prentice Bros.
2 24 in. Bickford, plain.
21 in. Snyder, B. Grd.
20 in. Davis, plain.
4-spdle. Lamson, gang.
3 spindle 22 in. Barnes.
No. 3 4-spdle. Garvin, gang.
No. 3 3-spdle, ditto.
No. 1 2-spdle ditto.
2 spdle. Novelty.
1-spdle, Sensitive.
2 spdle. horz
4 Power Post Drills.
20 in. Hilles & Jones post.
No. 5 Stow Flexible.
No. 4 ditto.
Small Stow ditto.

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3 in. Bar Sellers Hor. Boring Mach.
7 ft. Newark, ditto with P. C. F. 3½ in. bar, table facing attach. Can also be used as a milling machine.
Adt. Wire Straightening and cutting-off Machine.
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6 in. Bement Slotter.
11 in. Putnam Slotter.
33 in. Car Wheel Borer.

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FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment.

1 18 in. x 12 ft. L. & D. "Standard" Engine Lathe, Taper Attachment.

A1 order.

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Lathes For Sale.

A variety of second hand lathes, including machinist and speed lathes, both heavy and light, at very low prices

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Apply to MR. RICHARDSON, Supt

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MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

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Metal-Working Machinery

At Bargain Prices.

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One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain rib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 24 x 8 Screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12 in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24 in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict 3½ in. to 1 in. bolt heading machine.

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Branches at Chicago and Pittsburg.

HEAVY TOOLS

For quick delivery and good as new.

Betts Boring and Turning Mill, 10—16 ft. with extensions. Takes in up to 20 ft. Extra heavy.
19 in. Putnam Slotter.
54 in. x 21 ft. Pond Lathe.
42 in.—60 in. x 42 in. x 16 ft. Gleason Planer, 2 heads
42 in. x 16 ft. Putnam Lathe.
56 in. x 0 ft. Column Lathe.
20 ft. Rotary Planer, 36 in. traveling head.
4-spindle Drill Press. Adjustable. Heavy tool.

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LOCOMOTIVES FOR SALE.

One Pa ter Narrow Gauge 36 in. Locomotive with tender, complete, only $450. Wt. 20,000 lbs., size 8 in. cylinder x 14 in. stroke, 4 Drivers, Boiler guaranteed for 110 lbs. Engine first-class.

One Wyoming Valley 36 in. gauge Locomotive and Tender complete, at $650. Wt. 20,000 lbs., size 8 in. cyl. x 14 in. stroke. Boiler guaranteed good for 110 lbs. Engine ready to run.

One 42 in. gauge Locomotive, saddle tank, cyl. 7 in. x 12 in., 4 drivers. Also 9 Iron Coal Dump Cars 42 in. gauge, good as new.

SCHULTZ & CO., 14 S. Broad St., Phila.

FOR SALE.

Second-Hand Machinery.

1 84 in. Niles Boring Mill, two heads
1 72 in. Betts Horizontal Boring Mill.
1 54 in. x 22 ft. Pond Engine Lathe, triple back geared.
1 32 in. x 14 ft. Wright Engine Lathe.
1 30 in. x 14 ft. Fifield Engine Lathe.
1 24 in. x 16 ft. Fish Engine Lathe.
1 14 in. x 12 ft. Lodge & Davis Engine Lathe.
1 54 in. x 54 in. x 20 ft. Hercules Planer.
1 36 in. x 36 in. x 9 ft. Pond Planer.
1 No. 4 Cincinnati Universal Miller.

Also numerous other smaller tools, shafting pulleys, hangers and belting, all in fine condition.

Write for complete list.

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Hardware store within 200 miles of New York City. Must stand investigation and be reasonable in price,

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FOR SALE.

Entire plant of the Danville Rolling Mills and Nail Works at Danville, Pa., or any equipment connected with same.

Entire plant of the Coleraine Furnaces at Redington, Pa., or any equipment connected with same.

Entire plant of Cofrode-Saylor Bridge Works, Pottstown, Pa.

Pumping Plant.—2 twin duplex horizontal steam pumps bore of water cylinder 15 in., bore of steam cylinders 25 in. x 35 in. stroke. Suction pipe 12 in., discharge pipe 10 in. steam pipe 4 in., exhaust pipe 4 in. Total length of each pump 26 ft. 6 in. Total width of each pump 33 in., width of both pumps set up 10 ft. 6 in.

This plant, which is equipped with Schulte's condensers, can be run either high or low pressure and is in excellent condition.

C. R. BAIRD & COMPANY, Pig Iron,
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Second-Hand Machine Tools.

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10 in. x 4 ft. Reed, plain rest.
13 in. x 5 ft. Prentice Turret Lathe.
13 in. x 6 ft. Blaisdell, R & F. Rest.
13 in. x 6 ft. Barnes, plain rest.
14 in x 5 ft Gould, R. & F. rest.
14 in. x 6 ft. Flather, R. & F. Rest.
14 in. x 6 ft. Hendey, R. & F. and follow rests.
14 in. x 6 ft. Reed, R. & F. Rest and Chuck.
14 in. x 6 ft. Fitchburg, compound rest.
14 in. x 6 ft. Wright & S. and 8 in. chuck.
16 in. x 6 ft. Porter, R. & F. rest, 12 in. chuck.
15 in. x 6 ft. Pratt & W., R. and F. rest.
15 in. Chucking Lathe, Jones & Lamson.
18 in. x 6 ft. Blaisdell, R. & F. rest.
16 in. x 6 ft. Pond, R. & F. rest.
16 in. x 6 ft. Fox Turret Lathe, chasing bar.
16 in. x 8 ft. Pratt & W., plain rest.
18 in. Chucking Lathe, Windsor
18 in. x 8 ft. Munzer, plain rest.
19 in. x 10 ft. Lathe & M., Plain Rest.
20 in. x 6 ft. Pond, compound rest.
20 in. x 6 ft. Ames, compound rest.
20 in. x 7 ft. Ames, plain rest
20 in. x 12 ft. Pond plain and compound rest.
21 in. x 6 ft. Flather Turret Lathe, Friction, B. G., Auto. Feed, 15 in chuck.
23 in. x 6 ft. 6 in. Eddy Turret Chucking Lathe.
23 in. x 10½ in. Pat'y, plain rest.
2 - in. x 8 ft. Boring Lathe, Harrington.

PLANERS.

12 in. x 18 in. x 16 in. Willets.
15 in. x 15 in. x 3 ft
16 in. x 16 in. x 3 ft. Pratt & Whitney.
18 in. x 24 in. x 4 ft. with 14 in. centers.
24 in. x 24 in. x 9½ ft. Pond, chuck & center.
30 in. x 30 in. x 9 ft. New Haven.
36 in. x 30 in. x 8½ ft.

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6 in. Gould Bros.
6 in. Hand Power for bench, Boynton & P.
9 in. Wood & Light, traverse head.
13 in. Lowell.
13 in. Bolen & Crane, Geared.
14 in. Fitchburg, 28 in. Traverse head.
15 in. Hendey
15 in. Wood & Light, Traverse Head.
16 in. Chase, Crank.
18 in. Wood & Light traverse head.
24 in. Hendey.

DRILL PRESSES.

10 in. Bench Drill.
10 in. Acme Drill.
18 in. Upright Drill.
20 in. Prentice Bros., back gears, power feed.
20 in. Barnes, power feed, auto. stop.
25 in. Barnes, power feed, auto. stop.
9 ft. Holly Radial Drill.
3 Spindle Baker Drill.
2, 3, 4, 6 and 7 Spindle Gang Drills.

MILLING MACH.

No. 0 Garvin Universal.
No. 1 Garvin Universal.
No. 1 Pratt & W., plain.
No. 2 Garvin Power Miller
No. 1 Garvin Hand Miller.
No. 2 Garvin Hand Miller.
No. 3 Miller, Kompsmith.
No. 3 Garvin, plain, 2 vises
No. 4 Garvin, rack feed, without arm.
No. 2 Garvin Automatic Sprocket Wheel Miller.
No. 2 Becker Vertical Miller.
Pratt & Whitney Circular Miller.
Garvin No. 1 Lincoln.
Stroud Lincoln Miller.
Ames Lincoln Miller.

SCREW MACH'S.

1 21 in. x 6 ft. Flather Turret Lathe, back gears, and auto. feed to turret.
No. 2 Garvin Turret Lathe, Wire Feed.
2 Brown & S. No. 1 wire feed.
No. 2 Brown & Sharpe chasing bar.
No. 2½ Garvin, Plain.
No. 2 Pratt & Whitney, plain.
No. 2 Windsor, w. f., chasing bar and tools.
1 No. 4 Warner & Swasey, geared friction head, oil pump and 2-jaw chuck.
No. 5 Brown & S., chasing bar.
2 Pratt & W. Hub Mach's geared friction head, oil pump and 2-jaw chuck.

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No. 8a Mossberg, Roll feed
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Several Foot and Screw Presses.

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2 H.-P. Nash Gas Engine.
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Wire Straightener, Adt.
Shafting Straightener, New Haven.
No. 1 Pratt & W. Profiler, 2 spindles.

Write us your wants.

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Rare opportunity for concerns equipping new plants or adding to present facilities to secure Shafting, Hangers, etc., Standard Small Tools in great variety, Special Bicycle Machinery and Tools, General line of equipment and Supplies used in bicycle factory. All in first-class condition. Send for catalogues. Something in the lot sure to be of interest. Owners retiring from business. Address

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SECOND-HAND ENGINES FOR SALE.

One 12 x 36 Wheelock Engine, right hand, wheel 9 ft. diameter, 17 in. face, solid, 44 horse power.

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One pair 30 x 60 George H. Corliss Engines, wheel 28 ft. diameter, 96¾ in. face, 463 horse power, (per engine) $3250.

One 9 x 18 Exeter Engine, right hand, wheel 7 ft. diameter, 12 in. face, 35 horse power, 100 revolutions, $550.

One 18 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 25 in. face, 175 horse power, 80 revolutions, $770.

One 20 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 26 in. face, 219 horse power, 80 revolutions, $1650.

One 12 x 36 Babcock & Wilcox Engine, left hand, wheel 10 ft. diameter, 24 in. face, 52 horse power, 70 revolutions, $330.

One 10 x 24 Rider Engine, right hand, wheel 7 ft. diameter, 14 in. face, 31 horse power, 92 revolutions, $110.

One 14 x 48 George H. Corliss Engine, right hand, 16 ft. wheel, 20 in. face, 100 horse power, 75 revolutions, $275.

The horse powers are all figured on 80 lbs. steam, ¼ cut-off. Deliveries are f.o.b. Providence.

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10,000 feet Brazed Interlocked Tubing, assorted ⅝ in., ¾ in., 1¼ in., 1¼ in.
250 pair Seamless Fork Sides.
250 Set Frame Connection.
1 Bolt Cutter, cuts ⅛ in. to 2 in. Bolts, in good condition.
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6 Drill Presses.
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3 Bicycle Trunks in good condition.
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The FRED J. MEYERS MFG. CO.,
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1 19 K. W. Sturtevant Gen't'g Set.

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1 New 14 in. x 36 in. Right Hand Corliss Engine.
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One 14 and 20 inch x 3½ in. x 15 in. stroke, Worthington Duplex, Compound High Pressure. In good condition and for sale on account necessity for one of more capacity.
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The best Hardware opening in Eastern Illinois. Stock about $4000. Address

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Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

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AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

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Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

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Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

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One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower, No. 5. All in good order.

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Engineers' and Hardware Merchants,

Finsbury Circus Buildings, London, Eng., will be pleased to open correspondence with makers of Specialties for Sole Representation in Great Britain.

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All kinds of machinery, new and second-hand at very reasonable prices.

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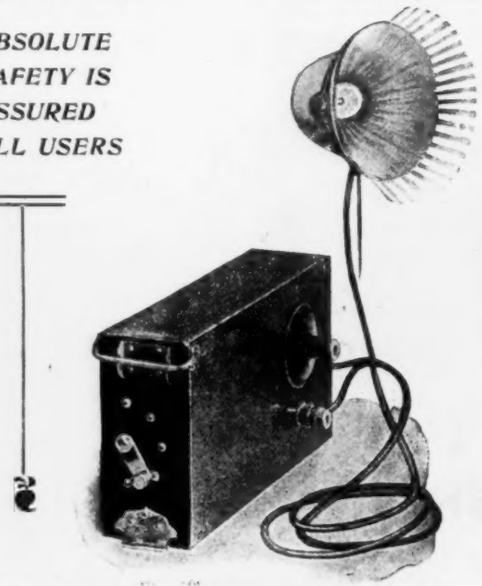

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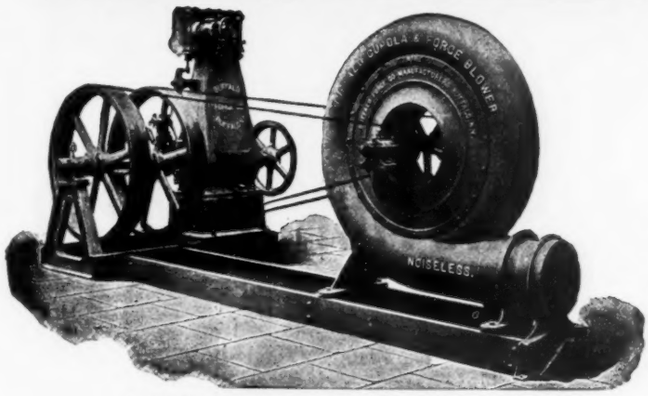

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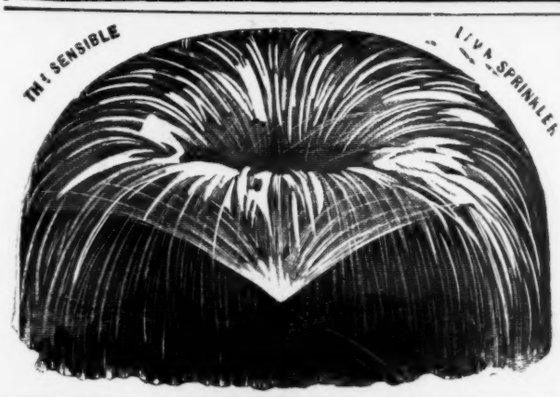

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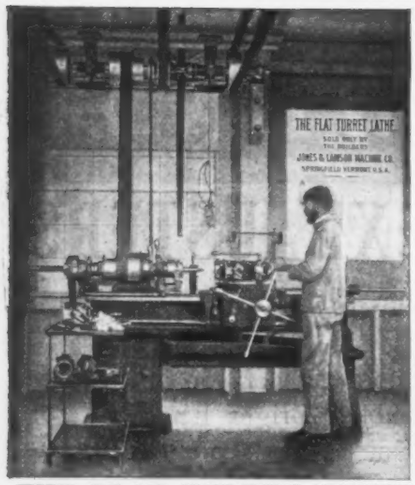

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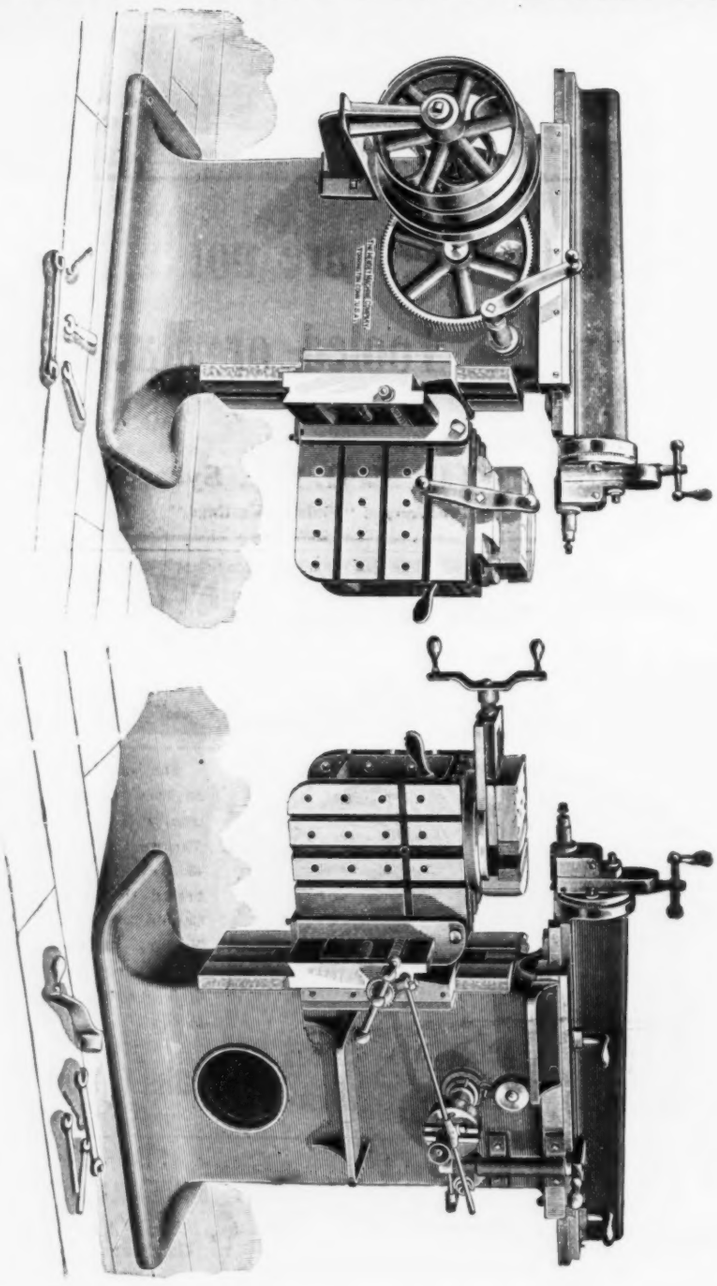

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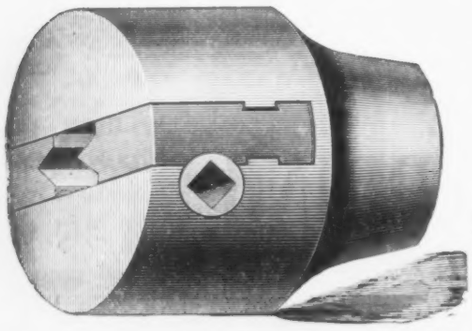

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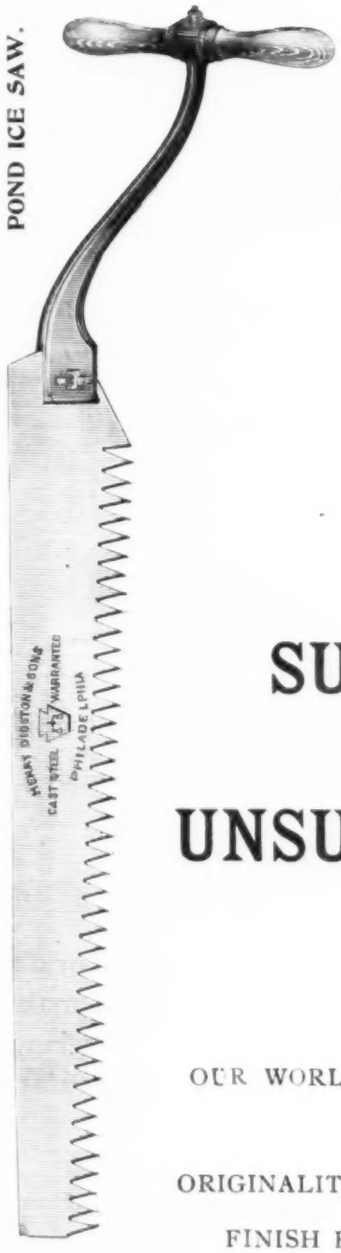

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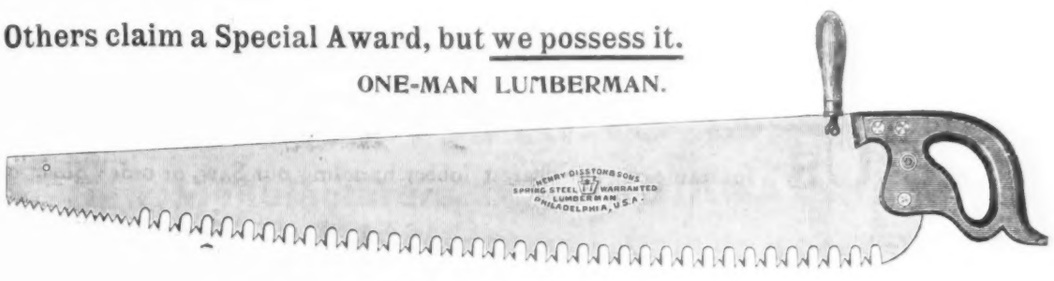

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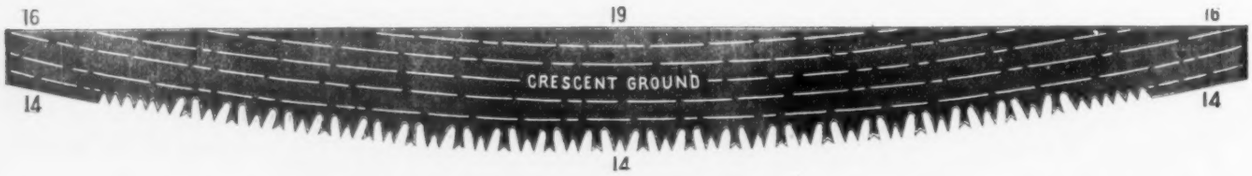

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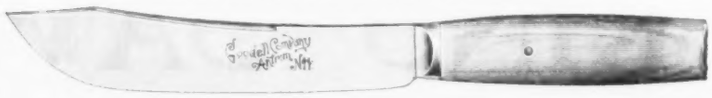

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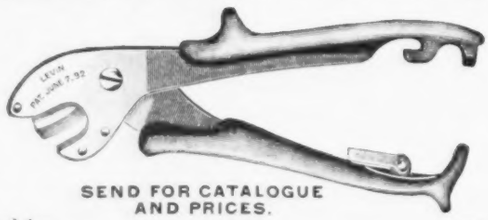

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FACTORIES:
HARTFORD, CONN.
NORWICH, CONN.
WALLINGFORD, CONN.
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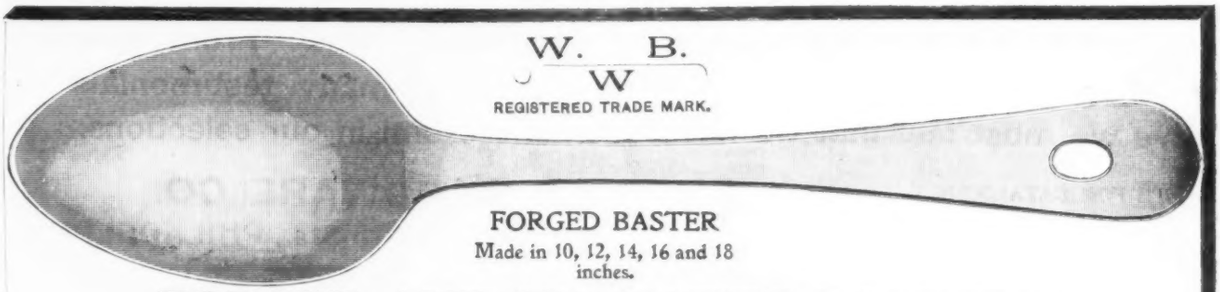
MADE ONLY BY
WM. ROGERS MFG. CO.,
SALESROOMS AND MAIN OFFICES,
HARTFORD, CONN.



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W
REGISTERED TRADE MARK.

FORGED BASTER
Made in 10, 12, 14, 16 and 18 inches.

FORGED AND THREADED BASTERS.

Send for New Catalogue.

BRANCHES.
New York: 226 Fifth Ave.
Chicago: 109 Wabash Ave.
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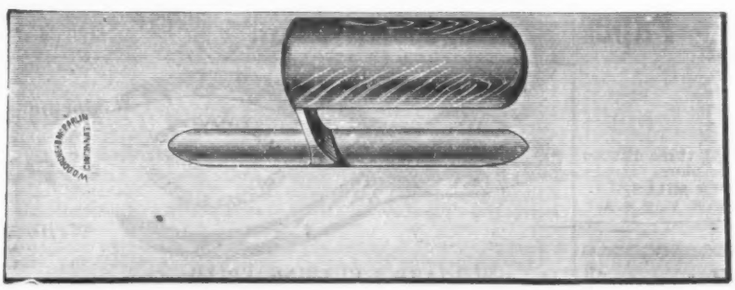
WALLACE BROS.,
Factories, WALLINGFORD, CONN.

"There Are Others,"

But not the Genuine, ALL Imitations.



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—IS MFD. BY—

THE NATIONAL SAW CO.,

GENERAL OFFICE:
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THE "ICE KING"

RETAIL PRICE,
$25.00

WOOD'S ICE TOOLS.

The recognized Standard in the United States and Canada for over 60 years.

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Arlington, Mass., U. S. A.

ATTENTION!!! MANUFACTURERS!!!

WE BUY ENTIRE STOCKS FOR SPOT CASH.

What have you to offer in Shovels, Hatchets, Hammers, Nails, Axes, Locks, Butts, etc.
Large quantities only.

CHICAGO HOUSE WRECKING CO., W. 35th and Iron Sts., CHICAGO, ILLS.

Take Your Choice

There are two lines of bicycles that hardware dealers can handle,

SELLERS AND STICKERS.

A bicycle manufacturer may and may not have a line that goes with a hardware dealer, a jobber picks from the whole lot the goods that he offers with the wants of the hardware dealer in view. From the many good agencies established and from the very many testimonials we have we must feel that we have been successful in our selections.

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SUPPLEE HARDWARE CO.,
Market and Fifth Sts., PHILADELPHIA.

HAND-MADE & GUARANTEED
NO MACHINE GRINDING OR DROP FORGED BLADES
HONED & READY FOR USE
RAZORS
CATALOGUES FREE.
SWEDISH RAZOR CO
WORCESTER, MASS.
NEW YORK OFFICE, 20 WARREN ST

BREAST DRILL NO. 1,

With Special Locking Device for use in tightening or releasing drills.

WITH Decagonal Sleeves when ordered.

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Bit Braces, Pin Vises, Checks, Chucks, Hollow Handle Tool Sets, Etc.

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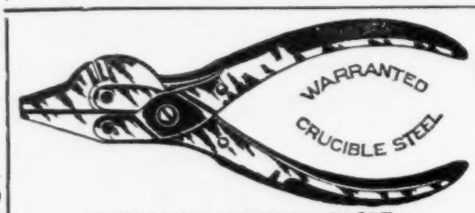

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Makers of the Largest Line of

PLIERS.

Write for 1898 Catalogue.

THE
Wm. Schollhorn Co.,
NEW HAVEN, CONN.

BERNARD'S VISE PLIER.

Established 1854.

Ice Tools

For Harvesting Ice.

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CLEVELAND, U. S. A.

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When using "KEEN" Shakspeare Razor. Retails for $1.50, $2.00, and *Special Ground*, $2.50. SOLE AGENTS FOR
Geo. Butler & Co., Sheffield, England.
Warranted Razors, Pocket and Table Cutlery, Carvers, etc.
Abr. Wundes, Solingen, Germany.
Pocket Knives, Scissors, Carded & Glass Case Assortments
A. Lacroix Fils, Montel-Thiers, France.
"Cook" Sabatier, Kitchen and Butcher Knives.

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Orange Shears, Tree Pruners, Etc.

THE J. T. HENRY MFG CO., Hamden, Conn., U.S.A.

1/2 SOLES

Don't Sell Poor Half-Soles. You will make more money by selling better ones. Whichever you like we have it. Send for Prices.

BAXTER, SCHENKELBERGER & CO., Boston, Mass.

THE BIGELOW... WIRE FLY KILLER.

Retails for 10 cents **J. F. BIGELOW,**
Patentee and Sole Manufacturer, Worcester, Mass.

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Send for Prices.

CLARK MFG. CO.,
STATION E, MOLINE, ILL.

OFFICE OF
THE MECHANIC ARTS HIGH SCHOOL,
BOSTON, November 17, 1898.

BUCK BROTHERS,
Millbury, Mass.

GENTLEMEN:

There are in use in the Mechanic Arts High School the following tools of your make which have been purchased during the last five years:

Two hundred seventeen sets of carving tools, sixteen in a set. } 5,770
Three hundred twenty-seven sets of carpenters' chisels, four in a set. } Tools.
Ninety sets of wood-turning tools, eleven in a set. }

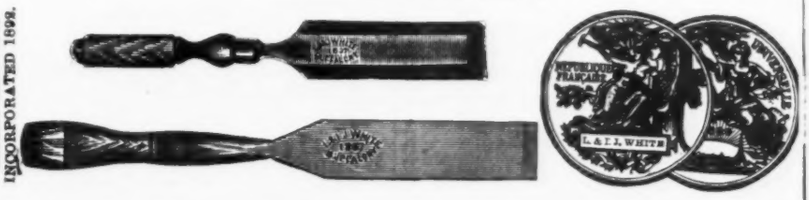
We have, also, a considerable number of special chisels and gouges. These tools were purchased because we believe them to be the best available, and we have had no occasion to regret our choice. No more than six or eight defective tools have been discovered, and these have been promptly replaced by perfect ones without expense to the school.

Your house is to be commended both for the uniform excellence of its products, and its eminently satisfactory business methods.

Very truly yours,
CHARLES W. PARMENTER, PH. D., Head Master.

HIGHEST AWARD PARIS EXPOSITION, 1889.

ESTABLISHED 1857
INCORPORATED 1892.



THE L. & I. J. WHITE CO., MANUFACTURERS OF **EDGE TOOLS.**

BUFFALO, N. Y.

Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.

ESTABLISHED 1825. ESTABLISHED 1825.

IMPORTANT DECISION RELATING TO THE

HEINISCH

TRADE-NAME ON SHEARS, TRIMMERS, &C.

The U. S. Circuit Court, Southern District of New York, Judge Townsend, has rendered a decision in the suit of "R. Heinisch's Sons Co. vs. Hermann Boker & Co."

"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

R. HEINISCH'S SONS CO.,
NEWARK, N. J.

N. Y. OFFICE, 90 Chambers St.

NOT CONNECTED WITH ANY SHEAR COMBINATION.

Charles Buck, Millbury, Mass., U. S. A.

MILLBURY EDGE TOOL WORKS.

I MAKE A SPECIALTY OF CARVING TOOLS.

CHISELS,
GOUGES,
CUT and DOUBLE IRONS,
SCREW DRIVER BITS,
REAMERS,
CUPPED NAIL SETS, ETC.

Also a Full Line of **RAZORS,**

Hand Forged, Hand Ground, made of Best English Steel, branded *CHARLES BUCK.* All Goods Fully Warranted.

SEND FOR CATALOGUE.

The BEST Pocket Cutlery on the Market To-day, WE MAKE.

ONLY THE BEST MATERIAL is used and skilled workmen are employed.

Each and every knife is tested before it leaves the factory and we

WARRANT THEM ALL.

WE ASK YOUR PATRONAGE.

We make over 500 different styles.

CATTARAUGUS CUTLERY CO., Little Valley, N. Y.

THE CELEBRATED

RED SEAL SHEARS.

MANUFACTURED ONLY BY

THE ACME SHEAR CO.,

BRIDGEPORT, CONN.

Eureka Combination Plyer.

THE BRIDGEPORT MFG. CO., of Bridgeport, Conn., have recently added to their department, which is now fully equipped with the latest and most improved machinery for the manufacturing of anything that can be made from sheet steel or brass. They will be pleased to receive inquiries and make quotations on any thing in this line.

Jumbo Nail Puller.

The "ORIGINAL JENNINGS" AUGERS and AUGER BITS.

Genuine have "Russell Jennings" stamped in full on the Round of each Bit.

FOR SALE BY ALL HARDWARE JOBBERS.

The Russell Jennings Mfg. Co., Deep River, Ct., U.S.A.

American Tool Chest Company,
NEW YORK,
MANUFACTURERS OF
TOOL CHESTS

Of all sizes, complete with tools, for Hardware, Toy Notion and Variety trades.

Factory and Salesroom,
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Also Machinists' Tool Chests, empty. Tool Cabinets and Work Benches. Illustrated Catalogue and prices furnished on application.

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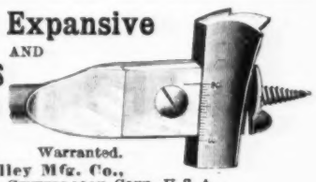
FOR METAL GOODS.

152 FRONT ST NEW YORK CITY.

Clark Expansive AND **WRIGHT'S Jennings BITS.**



Warranted.

Conn. Valley Mfg. Co.,
CENTERBROOK, CONN., U. S. A.

ROOT'S COBBLERS' SETS.

The Most Popular and Best Goods Made.

Every Family Wants One. Write for Prices.

The Root Bros. Co., Plymouth, Ohio.

Originators and Manufacturers

NOW READY.

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OUR 1899

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A BOOK OF NEARLY 1,000 PAGES.

THE ANNUAL ENCYCLOPEDIA

OF THE

JEWELRY WORLD.

LIST PRICES Illustrating Choice, Reliable and Complete Lines from Our 22 Departments.

Fine Mechanical TOOLS.

Mathematical Instruments, Etc.

Sterling Silver and Silver Plated Flat and **HOLLOW WARE.**

Watches. Diamonds, Jewelry, Optical Goods,

Silverware, Cut Glass, Clocks, Lamps,

Musical Merchandise.

Music Boxes, Canes and Umbrellas, Photographic Supplies, Etc. Watchmakers' Tools and Jewelers' Sundries. Trade Work, Etc.

CLOSE TO CASH TERMS. CLOSE TO CASH VALUES.

WE CARRY EVERYTHING THAT APPERTAINS TO THE TRADE.

Our business requires and we occupy the largest salesroom in our line in the Empire City's wholesale jewelry district. We extend every facility in accommodating customers towards furthering sales.

DEALERS INTERESTED SHOULD

SEND FOR OUR CATALOGUE. ADDRESS DEPARTMENT "S."

S. F. MYERS CO.,

Importers, Manufacturers and Wholesale Jewelers,

Myers Building, { 48 and 50 Maiden Lane, 33 and 35 Liberty St., } NEW YORK.

THE TRADE acknowledges our make of **BUTCHERS' STEELS**

THE BEST IN THE WORLD.

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MONCE'S NOVELTY GLASS CUTTERS. INTERCHANGEABLE LOCK STENCILS.

No. 1 Cutter. All glass men are familiar with this tool.

S. G. MONCE, - - UNIONVILLE, CONN.

—Oh, yes it is imitated, but we never sold so many as at present. Make sure name is stamped on them.

HARDWARE SHELVING.

Expert designers hardware shelving and correct arrangement of stock.

Manufacturers of Warren's Patent Hardware Sectional Shelving, Drawers, Screw and Bolt Cases, etc.

Shipped to all parts of the world.

OUR HEADQUARTERS

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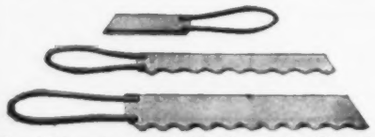
5th Floor Masonic Temple Chicago, Ill., U. S. A.

WE MAKE THE MARKET PRICE



No. 100. Crescent Knife Set. Best in the world.

Famous Parer and Slicer. No wasting of material. Polished beech handle, nickel plated blade and ferrule.

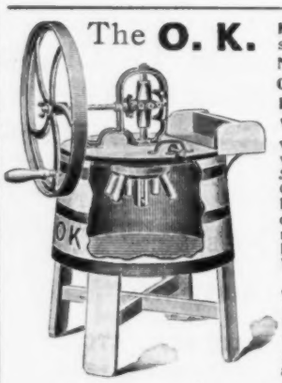
Combined Grater and Slaw Cutter. The only one. Now seasonable.

Illinois Bicycles are the best bicycles. Sold cheaper than any other high-grade wheels. Remember the Illinois.

ILLINOIS CUTLERY CO.,

Decatur, Ills., U. S. A.

The **O. K.**



Have you seen the New O. K. ROTARY WASHER with revolving Steel Ball Gearing? Best and easiest running Rotary Washer.

The large fly wheel has a broad rim, to which a belt can be attached.

Write for Circular, Price, etc., to

H. F. BRAMMER MFG. CO.,

DAVENPORT, IOWA.

Not in the Combination

Write for prices on

MRS. POTTS' SAD IRON HANDLES.

M. SCHRAYER'S SONS & CO.,

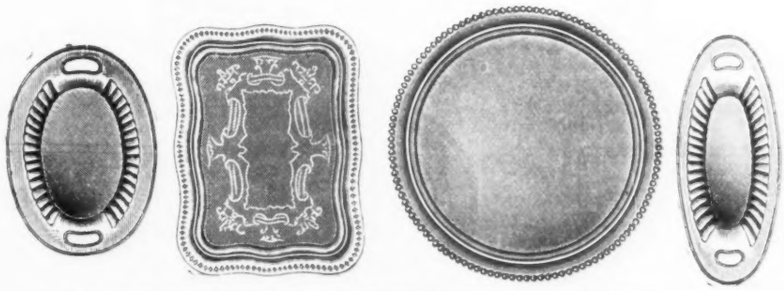
49 Blue Island Ave., Chicago, Ills.

WM. H. LITTELL, Eastern Representative, 127 Duane St., New York.

RANSON RICE, Missouri River, 100 E. Lake St., Chicago.

We Are Offering for *CHRISTMAS* a Very Choice Line of Fancy "ROCHESTER SILVER NICKEL" Fruit, Bread and Serving Trays.

SILVER QUALITY. NOT THE SHODDY KIND.



Remember our *"ROCHESTER SILVER NICKEL"* is our own Secret Process and is not like other plating.

WE LEAD THE WORLD ON TASTY NEW GOODS OF THIS CLASS.

ROCHESTER STAMPING WORKS, 141-157 Jones St., ROCHESTER, N. Y. WRITE FOR CATALOGUE C.

KEUFFEL & ESSER CO., NEW YORK,

Manufacturers of

Steel and Metallic Measuring Tapes.

Our tapes are favorably known since many years They are

AMERICAN MADE GOODS.

Reasonable in Price. *Fully Warranted.*

Catalogue and Discounts on Application.

PARKS & PARKS,
TROY, N. Y.
MANUFACTURERS OF
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Dont you want some goods in our line.

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FOR EXPORT and DOMESTIC TRADE

WE MAKE
BLIND FASTENINGS, BLIND HINGES,
In a Variety of Styles.
SHUTTER HINGES, SHELF BRACKETS, GATE HINGES and LATCHES
In Several Styles.
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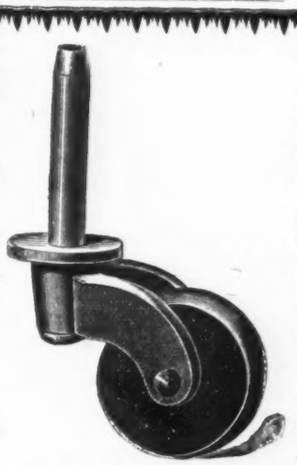
CASTERS, WELL WHEELS, HAYFORK PULLEYS, HATCHETS, HAMMERS, HOOKS, THUMB LATCHES, SASH LIFTS, DRAWER PULLS, CHEST HANDLES, FLORAL TOOLS, IRON PENNY TOYS, &c., &c., &c.



We are makers of many of the goods formerly made by the Shepard Hdw. Co., whose interest in the lines we acquired by purchase.

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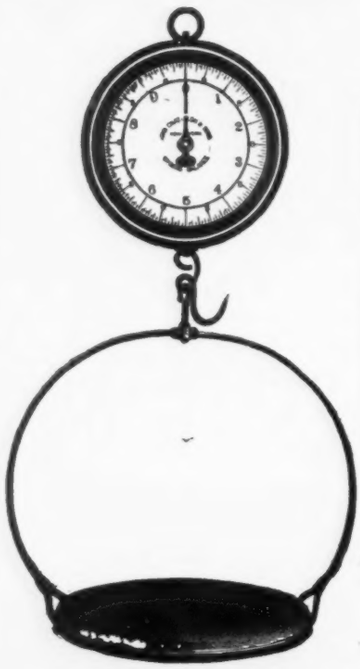
Wrightsville Hardware Co., Wrightsville, Pa., U. S. A.

New York Agents, ALDER & BOYD, 37 Warren St.

CHATILLON'S SPRING SCALES.

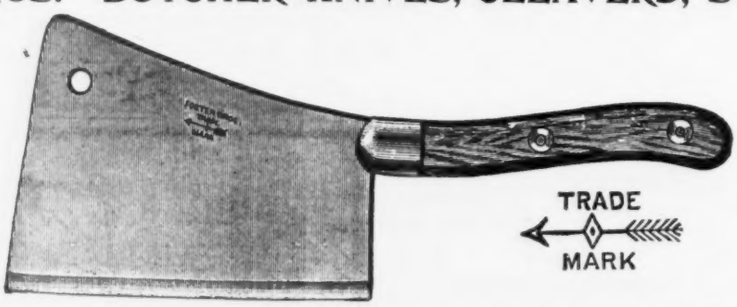
For more than **sixty years** we have carried on the business of making **Spring Scales,** and have made it OUR SPECIALTY.

All our Scales are warranted to weigh accurately and to be perfect in workmanship.



Our experience in the business, together with our unequaled facilities for manufacturing, enables us to produce a superior article, and thus to maintain the well-known reputation of **Chatillon's Spring Scales** as above that of other makes.

FOSTER BROS.' BUTCHER KNIVES, CLEAVERS, STEELS, &c.



These Tools are recognized in the Markets, Packing Houses and Abattoirs throughout the U. S. as the standard of excellence, quality being the first consideration. We carry in stock every style and size of Knives, Cleavers and Steel used in cutting meat; also Knives for kitchen use in Hotels, Restaurants and for domestic purposes.

FRIEDERICH DICK'S MAGNET DIAMOND STEELS.

By careful workmanship and the use of a special steel in their manufacture they have become famous throughout the world.

TRADE F. DICK MARK.

PHOENIX KNIFE CO.'S POCKET KNIVES.

Finest quality American Pocket Cutlery in large variety—Knives that are good sellers, and will give satisfaction to the user.

JOHN CHATILLON & SONS,

ESTABLISHED 1835.

85 to 93 Cliff St. and 12 Jacob St., - - - NEW YORK CITY.

$300,000,000.

The Tribute of Foreign Lands to the Superiority of American Manufactures in 1898!

The trade marks of many leading American Hardware and Tool Manufacturers are as well known to-day in the far distant markets of the world as at home. The Sharpening Stone trade is not a large one, but in the principal tool stores of all nations, in all countries, will be found whetstones for various purposes bearing this

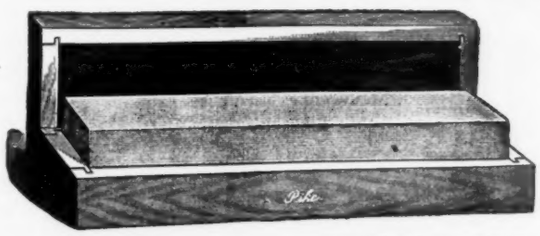
TRADE

MARK.

Wherever found, whether on the scythe stone of the Russian serf, on the fine grained stone of the Japanese ivory carver or on the oilstone of the American mechanic, 'tis known to indicate an article of superior excellence for its purpose.

OIL STONES.

LILY WHITE WASHITA has no equal for Carpenters and Joiners.



SCYTHE STONES.

KNIFE SHARPENERS.

Everything in the Sharpening Stone Line.

RAZOR HONES.

A large line of Belgian Hones, selected personally at the quarries, just received.

THE PIKE MFG. COMPANY, - - Pike Station, N. H.

OUT FOR BUSINESS.

THE ARCADE MANUFACTURING CO.

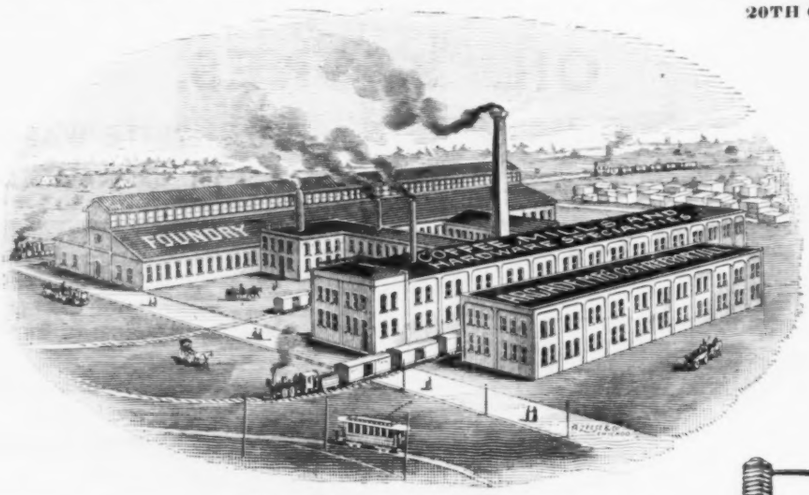
NO. 707.

wants your orders, and will give same prompt and careful attention. Are making every possible effort to merit your patronage. We manufacture the largest assortment of high grade Family Coffee Mills, light Hardware and patented household specialties of superior quality and merit ever placed on the market. Our goods are all finely finished and up to date in all respects, fully warranted and bound to please. Our new Catalogue, illustrating and describing this extensive line, will be completed in a few days and mailed to any address on application.

No. 7.

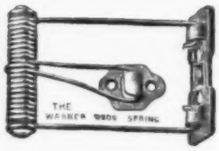
20TH CENTURY.

Partial List of Articles we Make.



Partial List of Articles we Make.

BALTZLY STEEL STOVE TRUCK.

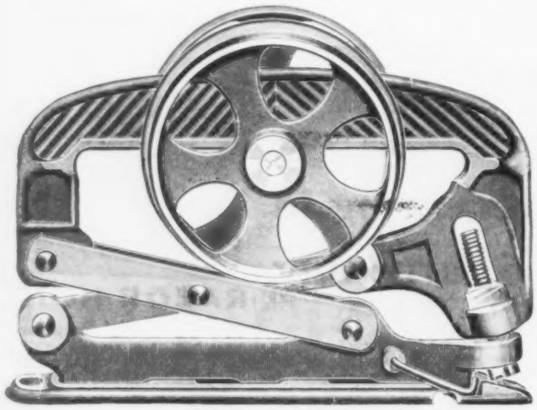


FREEPORT, ILLINOIS, U. S. A.

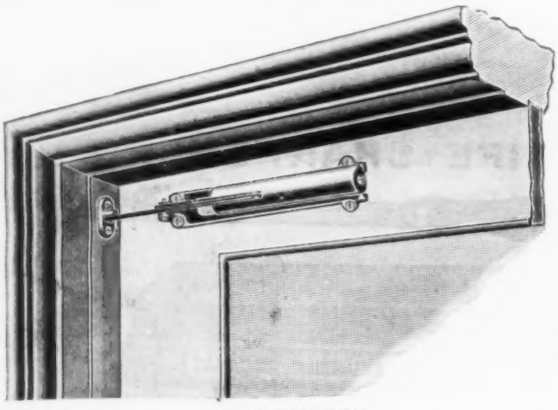
Our plant is modern, and supplied with up to date machinery and appliances, enabling us to turn out this extensive line of goods to the best possible advantage, giving our patrons the best goods for least money.

Agents,

J. J. COMSTOCK, 106 Lake St., Chicago, Ill.
HEALY & NARET, 59 Park Place, New York



THE WARNER.



THE WARNER.

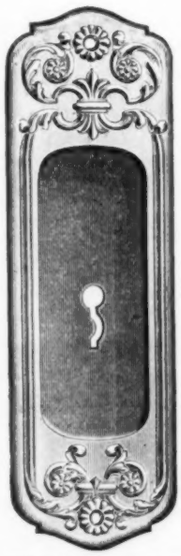
RUSSELL & ERWIN MANUFACTURING COMPANY,

NEW BRITAIN, CONN.

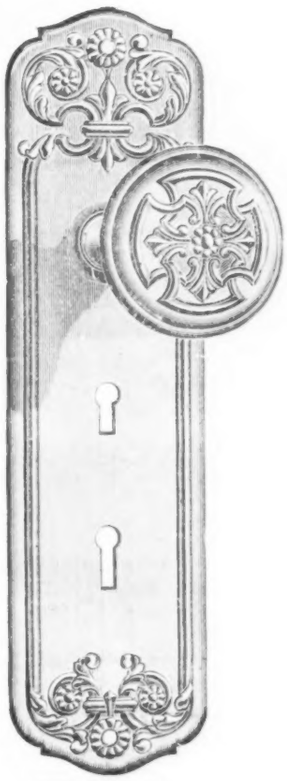
NEW YORK. PHILADELPHIA. CHICAGO. BALTIMORE. LONDON.

FORTUNA DESIGN.

REAL BRONZE.



ESCUTCHEON,
No. 975.



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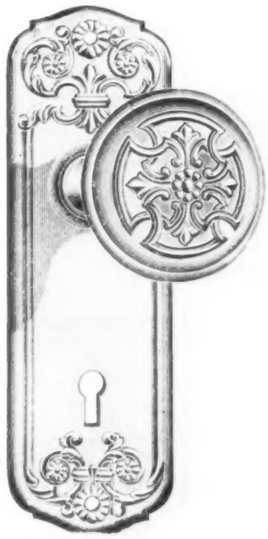
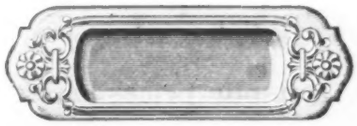
ESCUTCHEON, No. 906.



KNOB, No. 951.
ESCUTCHEON,
No. 935.

PUSH BUTTON,
No. 600.



SASH LIFT, No. 454.

BUILDERS and other HARDWARE,
IRON and BRASS, WOOD and MACHINE SCREWS.

RUSSELL & ERWIN MANUFACTURING COMPANY.

"STOP THIEF!!"

Tucker's Cash Tills

No. 1

Prevent Till Tapping.

English.

French.
No 1 A

German.

We make a large line of other goods also.

No. 2

New Goods and Old Goods in New Styles, etc.

Get our prices and Use our goods.

No. 3

New Catalogue for 1899.

RINGS EVERY TIME.

TUCKER & DORSEY MFG. CO., INDIANAPOLIS, U. S. A.

Some New

Store Door Handles

THAT HAVE RECENTLY BEEN ADDED
TO OUR LINES OF

Art Hardware.

"GOTHA."

"ST. OMER."

"MORTAIN."

"VASSAR" CYLINDER LOCKS,
FINE BIT-KEY DOOR LOCKS,
STEEL BUTTS, ETC.

READING HARDWARE COMPANY,

READING, PA

NEW YORK,
96 and 98 Reade St.

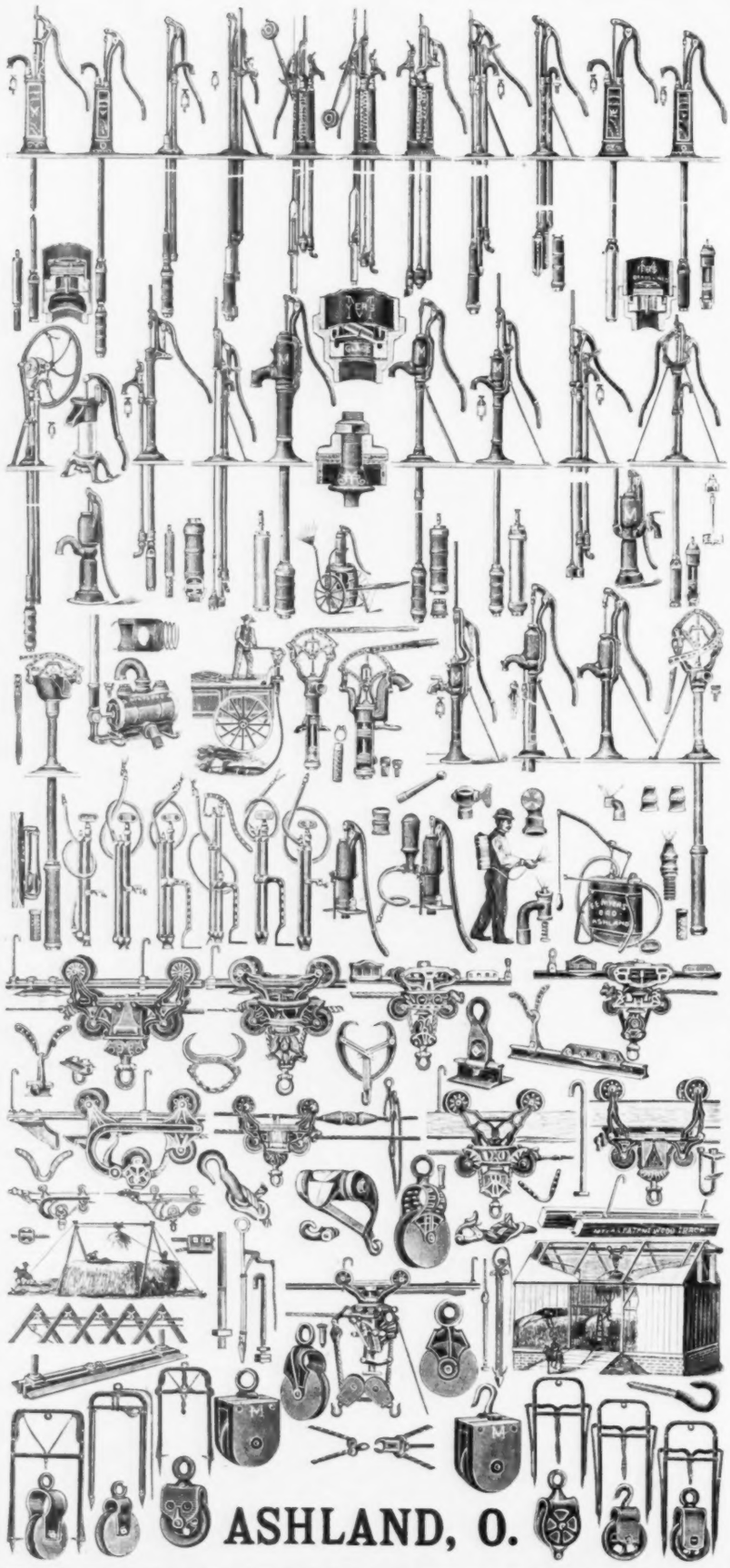
PHILADELPHIA.
617 Market St.

CHICAGO,
105 Lake St.

F. E. MYERS & BRO.

A Line without an equal on the Globe.

A Complete Line of Force, Lift, Windmill, Tank, Power, and Spray PUMPS.



Write for 1899 Large Poster and Catalogue.

A Complete Line of Carriers, Forks, Pulleys, Hooks, Store Ladders, Cycle Stands, Gate Hangers, and Lawn Swings.

ASHLAND, O.

PUMPS & HAY TOOLS.

HIGHEST AWARD

HIGHEST AWARD

McCAFFREY'S

AMERICAN STANDARD

Files AND Rasps

McCAFFREY FILE CO.

PHILADELPHIA

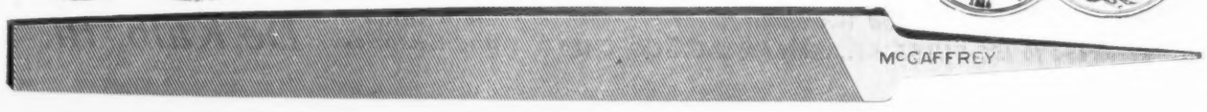
CHICAGO OFFICE, : : : 166 Lake Street

GERMAN AGENT

CARL BLOMBACH, Ronsdorf

HIGHEST AWARD

HIGHEST AWARD

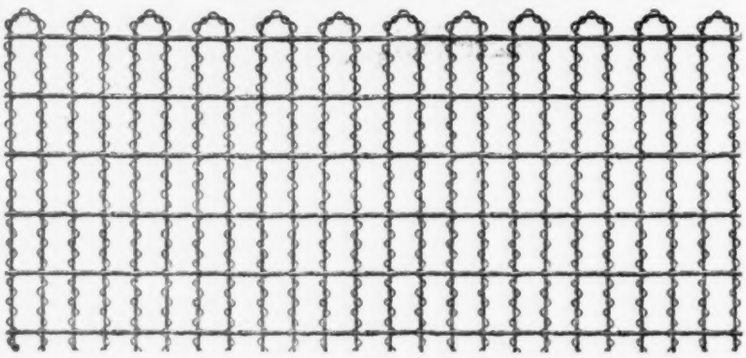


M. M. S. Poultry Fence

Patented July 21, 1896. [TRADE MARK.] Patented July 6, 1897.

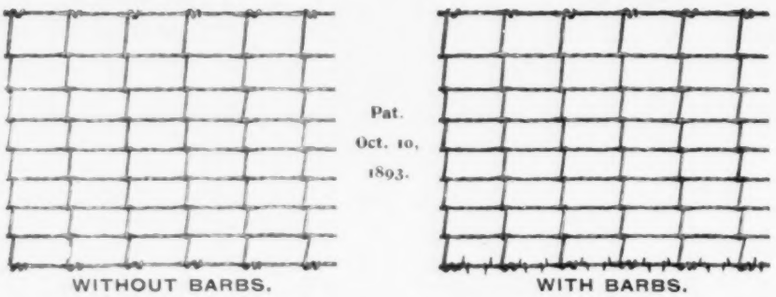
No other line of fencing has ever been put on the market that has grown so rapidly in demand or that has given such universal satisfaction as our M. M. S. Poultry Fencing; a cable selvage and a cable every foot in the height of the fence with its multitude of horizontal lines makes it the strongest and best; stretches up nicely and affords a saving of fully 50 per cent. to the user, as it requires but few posts and no top or bottom rail.

Steel Web Picket Lawn Fence



is used extensively in every state and territory in the Union; indestructible, artistic in design, made entirely of steel, yet cheaper than wood. Full line of steel gates, posts, rail, etc.

Our Cabled Field and Hog Fence



WITHOUT BARBS. WITH BARBS.

has more good qualities than all others combined, perfectly adapts itself to hilly or undulating ground, is easily and rapidly erected, and is the only successful farm fence now produced.

De Kalb Fence Co.

Pacific Coast Office and Warehouse:
154 to 156 FIRST ST., SAN FRANCISCO, CAL.

Main Office and Factories: **De Kalb, Ill.**

Ask for Stowell Hangers

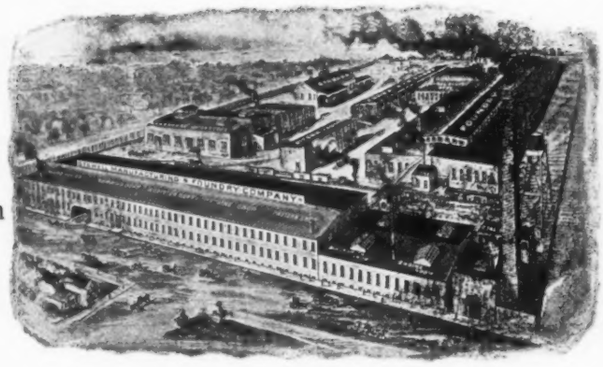
For Sale by the Leading HARDWARE TRADE

High Grade Goods Only.

We also make Hot Air Registers and Ventilators, Pulley Blocks, Shoe Lasts and Starts.

Door Hangers for Baggage Cars, Express Cars, Freight Cars, Street Cars, Elevator Cars and every use.

Hardware, Brass, Grey and Malleable Iron Castings.

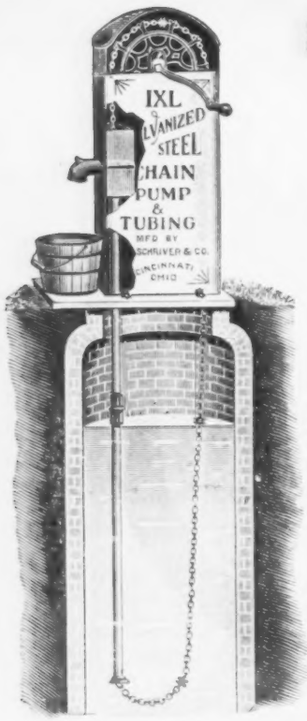


The Largest Door Hanger Plant in the World.

STOWELL MANUFACTURING & FOUNDRY CO.,

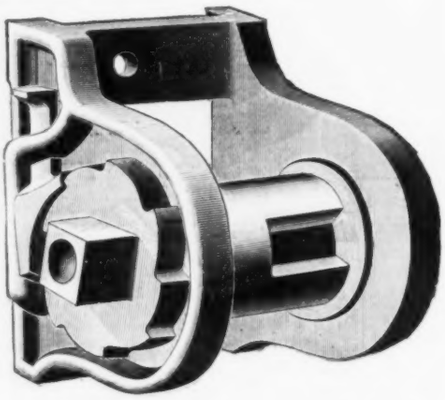
SOUTH MILWAUKEE, WIS.

WM. H. LITTELL, Eastern Agent, 127 Duane St., New York.



"I. X. L." SPECIALTIES.

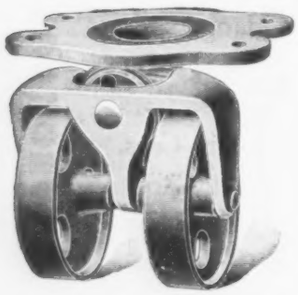
The dealer and consumer are saved much time and trouble in handling the **I. X. L.** Improved Ratchet, as it is so constructed that all the parts are held together as one piece, which avoids the losing of PAWLS, and it will not fall to pieces when the wire slackens after being adjusted to the fence. It has a quick action, positive catch and no keys to fall out.



Chain Pumps have always been in favor on account of the many advantages they have over others, and the objection to the wood curb and tubing is overcome in the I. X. L. Galvanized Steel Curb and Steel Tubing, making it the best and most beautiful pump on the market.

We especially call attention to its superiority over the old Wooden Suction and Iron Pitcher Pumps, as there are no valves to get out of order or dry out, and it will always throw a larger stream of water than any other Pump on the Market.

It Throws More Water and Pumps Easier than any other pump in existence.
It Keeps the Water Pure and Fresh.



"HERCULES CASTERS"

Are the Strongest and Best in the market, having all the advantages of other casters, and Special Features of their own, namely, a larger anti-friction wheel being one-half the diameter of the floor wheel, which makes it revolve easier, its long stem giving sufficient side motion so as to let the floor wheels adjust themselves to uneven surfaces.

Why You Should Use the I. X. L. Galvanized Steel Tubing.

It does not make the water taste as wood tubing does.
It will not rust, being made out of No. 24 Gauge Best Galvanized Steel.
It will not rot or accumulate filth, and leaves the water clear and pure.
It is anti-freezing, as the reservoir piece has a small hole in same, which allows the water to run out.
It only weighs ½ lb. to the foot, while wood tubing soaked with water weighs 6 lbs. or more per foot.
It can be used in wells as deep as 40 feet.

The I. X. L. Galvanized Steel Tubing can also be used on any make of wood curbs, as the stirrup on all other curbs will fit the square reservoir box on the Galvanized Tubing.

Ask your Jobber for Them.

MANUFACTURED BY

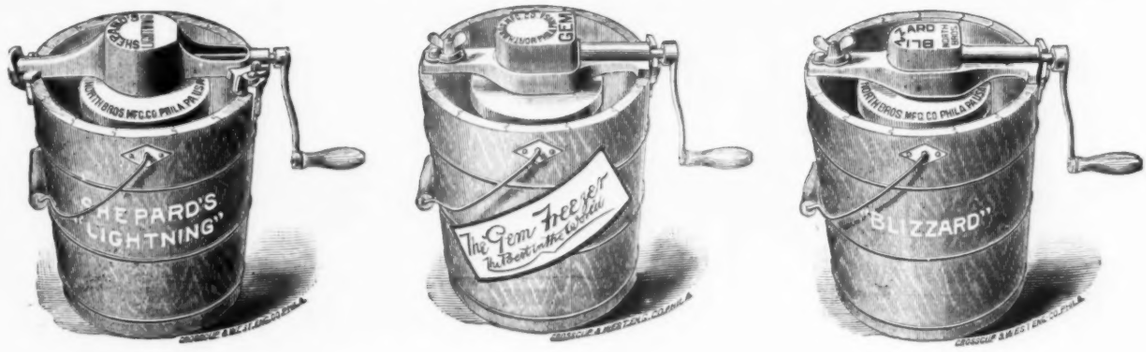
O. P. SCHRIVER & Co.,

Cincinnati,

Ohio.

Write for Prices.

LIGHTNING GEM BLIZZARD FREEZERS

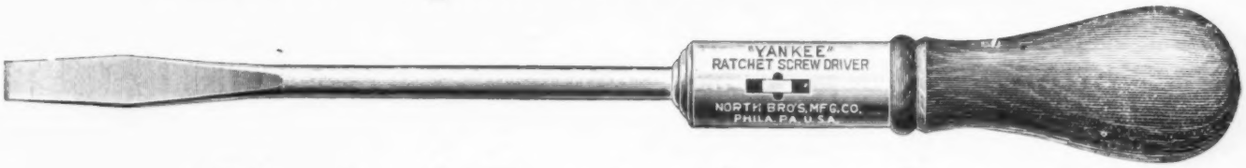


ARE	HAVE	EXCEL in
Well advertised.	Cedar Pails with Electric Welded Wire Hoops.	Easy running.
In demand.	Cans of Heavy Tin with Drawn Steel Bottoms.	Quick freezing.
Easily sold.	AUTOMATIC Twin Scrapers.	Economy.
Satisfactory in use	"The Ice Cream Freezer Book" tells all about	Convenience.
Of known reputation.	these and our other Freezers, mailed free.	Practical results.

"YANKEE" TOOLS.

"Yankee" Automatic Drill.

"Yankee" Spiral-Ratchet Screw Driver.



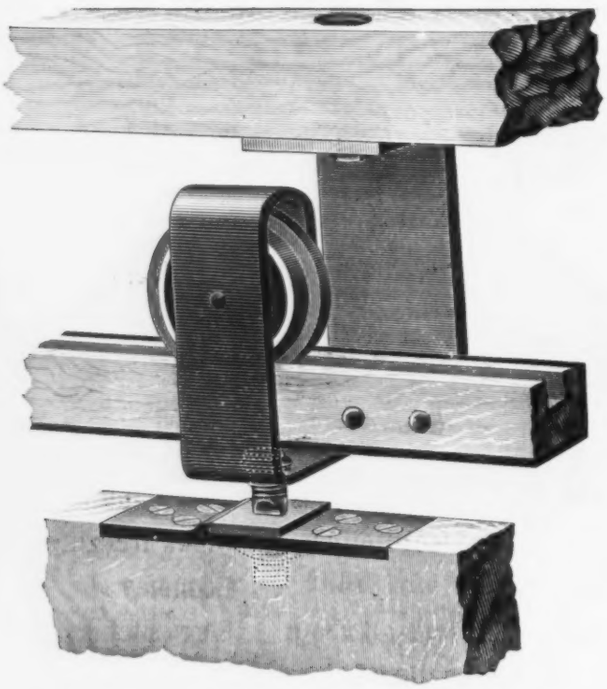
"Yankee" Ratchet Screw Driver.

Send for "THE YANKEE TOOL BOOK."

NORTH BROS. MFG. CO., = Philadelphia, Pa., U. S. A.

New York Agents: JOHN H. GRAHAM & CO., 113 Chambers Street.

Wilcox Swivel Ball Bearing
NOISELESS



THE FIRST NEW HANGER FOR 1899.

AUDITORIUM HANGERS

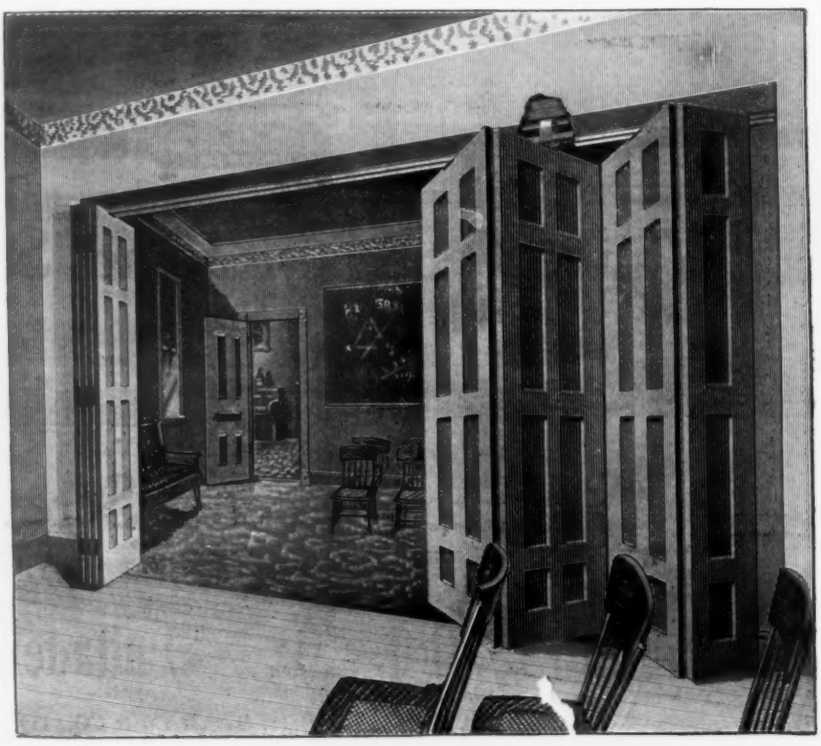
FOR

Folding and Sliding Partition Doors.

These Hangers are furnished with finest Ball Bearings, both in the Swivel and the Wheels, and they are made in two sizes to fit Doors of different thicknesses.

WILCOX MFG. CO.,
AURORA, ILL.

Send for Catalogue and full description. You never saw any thing like it.



"SEE THE HAIR FLY. NOW IS THE TIME"

For the New '98 Chicago Clipper.

Retails for $8.75.

"Known the world over" as the "Greatest Clipping Machine ever invented." Patented in the United Sta es, Canada, England, France, Germany and Russia. Holds World's record for fast horse clipping. Time, 14 minutes. All enterprising hardware men can sell this machine in place of the old fashioned two-hand variety. Can be set up in one minute in any place by any one. Thousands of testimonials from well satisfied customers. Weight of machine, 35 pounds; boxed, 55 pounds. The day is gone by when a man will spend half a day clipping a horse when it can be done with the new '98 Chicago Clipper in as short a space as 14 minutes Get in line. Send for a catalogue.

"STEWART PATENT."
Most Highly Finished Clipper Made.

Hair Clippers. There are two kinds—

"Hair Clippers" and "Hair Pullers." If you want "Hair Pullers" ask for "any old kind." If you want "Hair Clippers" insist on the "Stewart Patent." There's no other "just as good." They will cost you no more than the "inferior kind." Each part is absolutely interchangeable; each Clipper is warranted to cut perfectly. We have just been awarded Gold Medal at Trans-Mississippi Exposition, highest and only award for horse clipping, sheep shearing and cattle grooming machines.

Send for catalogue of "Modern Clippers."

CHICAGO FLEXIBLE SHAFT CO., 158-160 Huron St., CHICAGO, ILL., U. S. A.

HAMMACHER, DELIUS & CO., Hamburg, Germany, Sole European Agents.

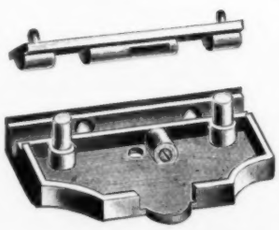
SUCCESSOR TO
HOTCHKISS SONS.

Established in 1850

EDWARD S. HOTCHKISS,

Manufacturer of **Hardware,**

BRIDGEPORT, CONN.



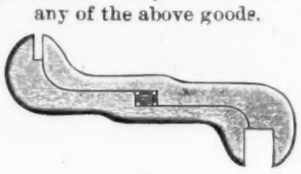
No. 40 B.B. Clipper.

The No. 40 Ball Bearing Clipper, as illustrated above, is one of the best horse clippers that can be manufactured. It is very handsome in appearance, simple in construction, strong and splendidly finished. It sells rapidly, and will give much better than the average profit. I recommend this clipper as a most superior article and solicit your order. The ball-bearing cap and ball carriage, as shown on the left, are in operation held together by the small screw, thus avoiding any chance of losing the balls.

I manufacture and carry in stock a full line of

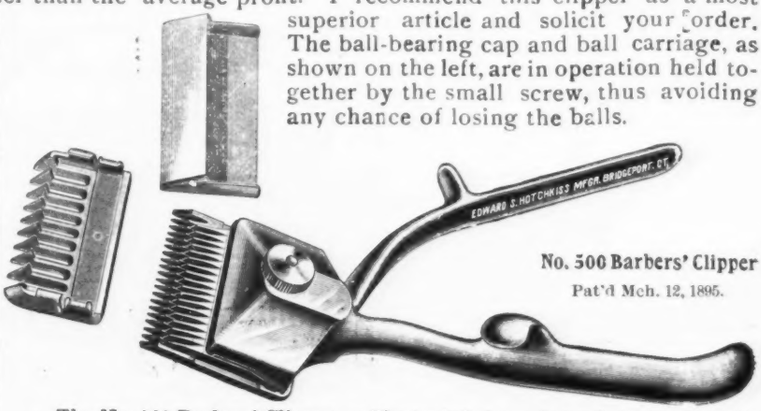
Curry Combs,
Horse and Barbers' Clippers.
Rat and Mouse Traps,
Baxter Pattern
S Wrenches, &c.,

and hope to hear from you when in want of any of the above goods.



S Wrench.

Made in 4, 6, 8 and 10 inch sizes.



No. 500 Barbers' Clipper
Pat'd Mch. 12, 1895.

The No. 500 Barbers' Clipper, as illustrated above, is made in two lengths of cut, and is furnished with or without the adjustable shoe, as shown in cut. This gives two additional lengths of cut. This Clipper is made with a cap entirely separate from the handle, making a very simple and superior construction. Orders and inquiries will receive most careful attention.

Send for our New 1899 Catalogue, finely illustrated and completely describing the

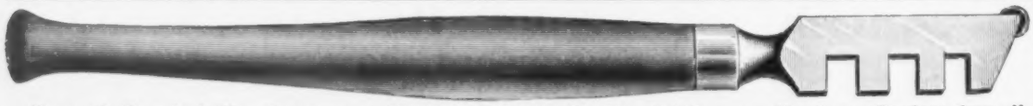
WHITE MOUNTAIN FREEZER

Don't place your order for Ice Cream Freezers until you know of the superior merits of the "White Mountain."

ALL LEADING DEALERS SELL THEM.

The White Mountain Freezer Co., - Nashua, N. H.

BUFFALO SCALE CO., Buffalo, N. Y.
SCALES OF ALL KINDS



Barrett's Glass Cutters Standard

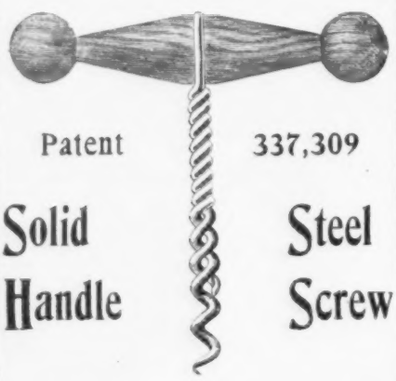
Barrett's Practical Glass Cutters are the standard the world over. Sold by more Hardware Dealers than all other makes combined. Send for prices and sample. W. L. BARRETT, Manufacturer, Bristol, Conn., U. S. A.

IMPROVED
Young America Scale.
It Is Made of Steel. White Tile Top, Tin or Brass Scoop Top. Brass Dial.
BEST IN THE WORLD

A most beautiful and attractive scale for all purposes. Beautifully enameled, ornamented and striped. Weighs 20 pounds by ounces. Occupies but little space. Is light and easily moved. It can be regulated by turning the brass screw on top. It is always ready and easily understood. It is a convenient scale to use and has no weights that may get lost. You can look this one in the face to prove its accuracy without looking for weights. Every scale examined before leaving the factory and warranted correct.

MANUFACTURED BY
American Cutlery Company,
CHICAGO, ILL.

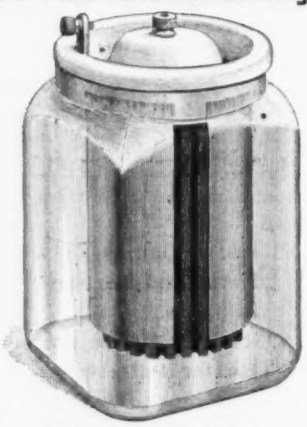
--New 99--
Machine Made and Carded
LIST $3.00 PER GROSS
ASK FOR SAMPLES AND DISCOUNT



Patent 337,309
Solid Handle
Steel Screw

Rockwell Clough
ALTON, N. H., U. S. A.

New Peru Hercules Battery.



THE VERY BEST.

The circular zinc which surrounds the carbon is attached to the top in such a manner that it cannot come in contact with the carbon, making a short circuit impossible.

The carbon is hollow and is filled with a depolarizing compound. It has a fluted outside surface and has an E. M. force of 1.47 volts.

Sold in case lots of fifty. Write for prices.

Peru Electric Mfg. Co., Peru, Indiana.

Squeezers

OF LEMONS, LOOK!

Here are six kinds of Lemon Squeezers —we make six others. Have all kinds to suit everybody. They are the best and cheapest Squeezers made.

All who sell squeezers and don't buy ours, lose an opportunity for profit.

Also ICE GOODS, SHREDDERS, PLANES, PICKS, ETC. . . . .

It costs but a penny to ask and receive valuable information. Let us hear from you.

Logan & Strobridge Iron Co.,

New Brighton, Pa., U. S. A.

EDWIN HILLS, = Plainville, Conn.,

MANUFACTURER OF HARDWARE SPECIALTIES.

Above are a few kinds that are good sellers, and now is the time to place your orders for spring trade. Please state quantity you can use of a kind and let me quote you a low price, delivered to your city. All goods are sold by the gross. Send for catalogue.

"ROME"
Nickel Plated Copper Tea Sets.

Sugar Bowl, Cream Pitcher and Spoon Holder. Heavily Silver Lined.

"ROME"

NICKEL PLATED COPPER WARE.

Tea and Range Kettles, Tea and Coffee Pots, Silver and Tin Lined, Trays, Serving Dishes, Pitchers, Insets, Wash Basins, Wash Boilers, Tea Sets, Cups, Dippers, Stove Tanks, Cuspidors, Etc.,

Have you our new catalogue? If you handle Copper Ware you need it. We will forward and quote prices on request.

ROME MANUFACTURING COMPANY, Rome, N. Y., U. S. A.

Approved Methods of Arranging and Displaying Hardware.

THE AMERICAN HARDWARE STORE.

By R. R. WILLIAMS, Hardware Editor of *The Iron Age.*

450 PAGES 500 ILLUSTRATIONS. PRICE $3.00.

SUMMARY OF CONTENTS.

General Arrangement.
Office.
Shelving.
Galleries.
Elevators and Cranes.
Show Windows.
Counters.
Counter Showcases.
Upright Showcases.
Ceiling Arrangement.
Sampling Goods.
Signs in the Store.
Pillars for Displaying Goods.
Scales.
Roll Paper.
Nails.
Farm and Garden Tools.
Scythes.
Bolts, Screws, etc.
Crosscut Saws.
Hand Saws.
Edge Tools.
Planes.
Squares.
Plumbs and Levels.
Axes and Hatchets.
Cutlery.
Sporting Goods.
Locks and Door Trimmings.
Sandpaper.
Screen Wire Cloth.
Wire.
Files.
Horseshoes.
Chains.
Belting.
Rope.
Handles.
Sleds.
Scale Beams.
Farm Bells.
Malleable Fittings, etc.
Pumps.
Pipe and Tubing.
Axles.
Glass Racks.
Glass Cutting Tables.
Paints and Colors.
Oils, Turpentine and Varnish.
Brushes.
Oilcloth.
Seeds.
Bird Cages.
Lamps.
Stoves.
Iron and Steel.

This is the only complete work on the subject.

It gives practical suggestions in regard to the arrangement of the store—office, shelving, counters, racks, bins, sampling, window display, etc., etc.

It describes the practice of Hardware merchants in all parts of the country, and many different methods of accommodating and displaying leading goods.

Illustrations and detailed descriptions with measurements are given, so that Hardware merchants can readily adopt the methods described in the volume.

This book with its mass of practical and detailed information will be of great service—

To progressive Hardwaremen who are desirous of improving their stores;

To those who are intending to open new stores;

To those who want information as to the best methods of displaying and accommodating any given class of goods;

To those who wish to know how other merchants arrange their stores;

To those who are interested in the question of window display;

To those who are extending their business in any direction;

To those who desire practical suggestions in regard to the arrangement and sale of the different Hardware articles.

DAVID WILLIAMS COMPANY, Publishers, 232-238 William St., N. Y.

"Rapid" Coffee Grinders and Pulverizers

No. 2½, $1.50

No. 5, $8.00

Sef-Priming and Measuring Pump

No. 97 Pump and Auger, $5.00

Enterprise

Patented Hardware

Specialties

are the Best Made

The Rapid Grinding and Pulverizing Coffee Mills are the only Mills made that Pulverize Perfectly. Thirty sizes and styles from $1.25 to $50.00.

The Old Reliable **Meat and Food Choppers** are superior to any in the market, and dealers make no mistake when they carry a line of them in stock.

Order through your Jobber.

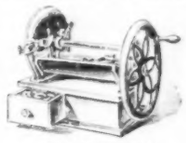
Send for Illustrated Catalogue, describing these and many other articles.

The Enterprise Mfg. Co. of Pa.

Third and Dauphin Streets

Philadelphia, Pa., U. S. A.

Rotary Smoked Beef Shaver



No. 125, $18.00

Meat and Food Choppers

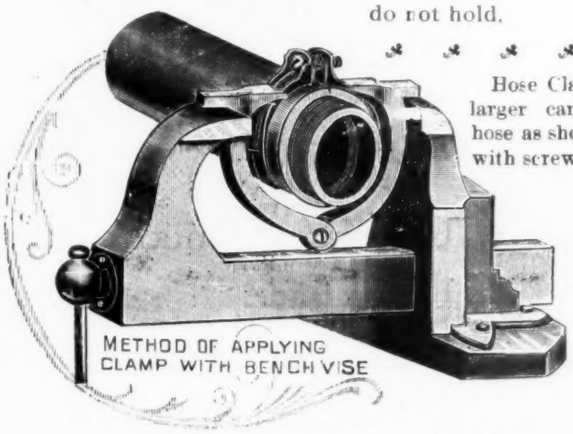
No. 2, $1.50

No. 10, $3.00

No. 12, $2.50

A CURE FOR LEAKY HOSE

is for the dealer to order all hose coupled with ***SHERMAN CLAMPS,*** as that will remedy many leaks that come from wire bands that stretch or cast clamps that break and do not hold.



Hose Clamps 1 in. and larger can be put on hose as shown in cut, or with screw driver alone.

Small sizes ½ and ¾ in. for lawn hose are applied to hose with screw driver alone.

SOLD BY ALL JOBBERS.

Manufactured by **H. B. SHERMAN MFG. CO., Battle Creek, Mich.**

A. MUGFORD · DESIGNER ENGRAVER & ELECTROTYPER

HALF-TONE PHOTO-ZINC ETCHING and WOOD ENGRAVING

ALL DONE ON THE PREMISES

177 ASYLUM ST. HARTFORD CONN.

NEW YORK OFFICE 120 LIBERTY ST. ROOM 503 BEARD BUILDING

MODERN METHODS

of Store Arrangement, Accommodation and Effective Display of Hardware Stock are illustrated and described only in

The American Hardware Store.

450 Pages. 500 Illustrations.

THREE DOLLARS.

DAVID WILLIAMS COMPANY,

PUBLISHERS,

232-238 William St., New York.

Tuck Manuf'g Co., Brockton, Mass. Established 1852.

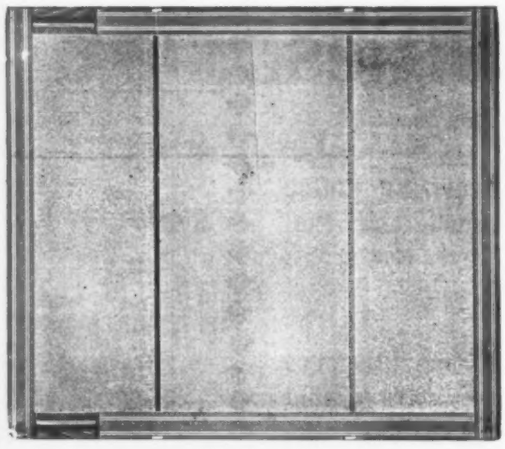
MANUFACTURERS OF

FINE TOOLS, CUTLERY & SPRINGS.

4 TUCK MFG. CO.

NAIL SETS OF ALL SIZES AND KINDS. Send for Tool Catalogue.

THE "FLYER" SCREEN.



The Screen that stays together.

The Screen that, wet or dry, clean or dirty, new or old, always adjusts easily.

The Screen that is smooth and well made from good materials.

This year it may be had in soft wood at lower prices.

"There are others" made to look like this screen, but the construction necessary for the above results is patented.

We have several new patterns of Fancy Screen Doors Send for illustrations.

The A. J. PHILLIPS CO., Fenton, Mich.

N. B.—What shall it profit a man if he "blow in" his substance advertising and then disappoint his trade?

New Razor Strop ! ! !

THE "YANKEE"

A 50c STROP FOR 25c. ! ! !

A Strop that will produce the keenest possible edge to any razor

This Strop is mounted on a most attractive, yellow, black and red Show Card, and is guaranteed to sell 12 to 1 of any other 25c. Strop on the market! Margin to dealer remarkably liberal! $2.00 per doz.

Made of a fine piece of selected horsehide and heavy hose canvas back.

Carefully prepared with our celebrated Razorine.

Have a Trial Lot. The rapid sale will amaze you.

Fac-simile of Display Card.

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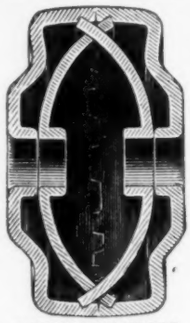

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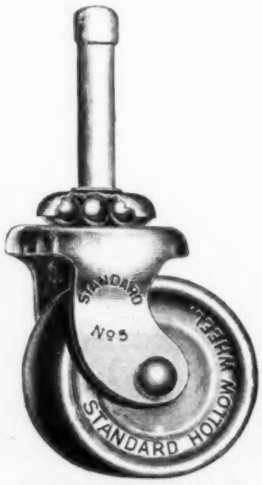

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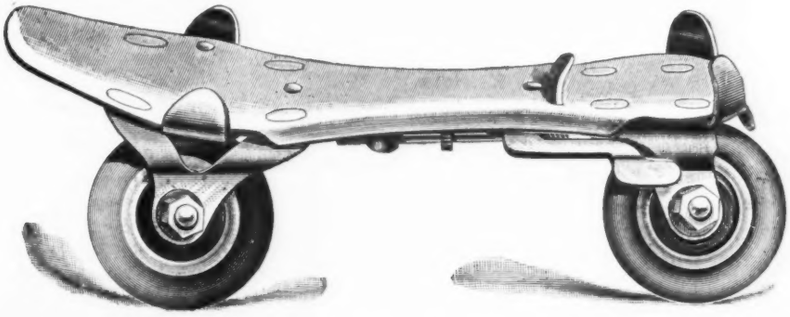

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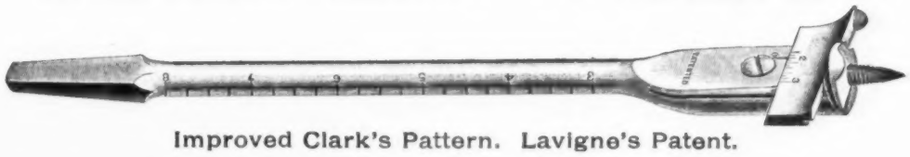

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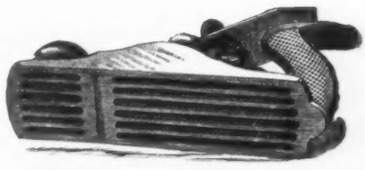

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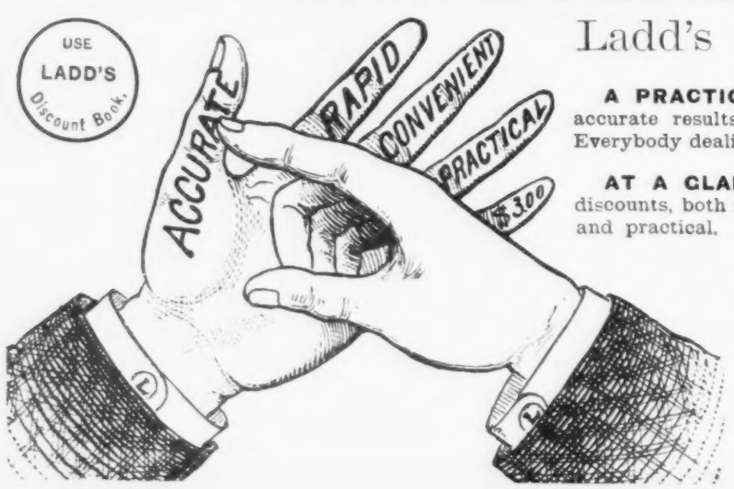

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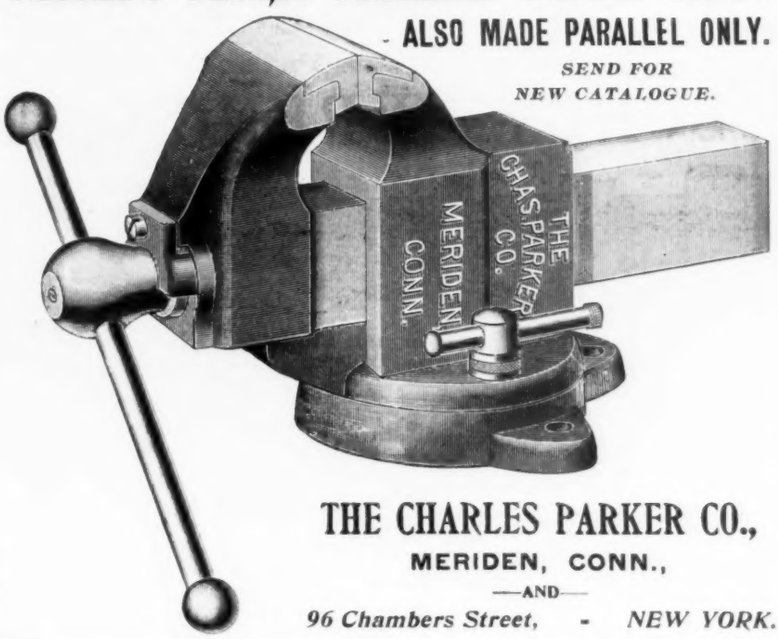

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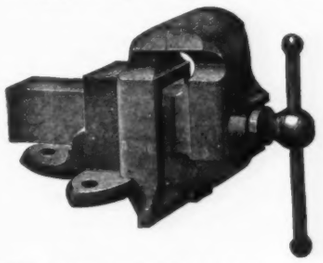

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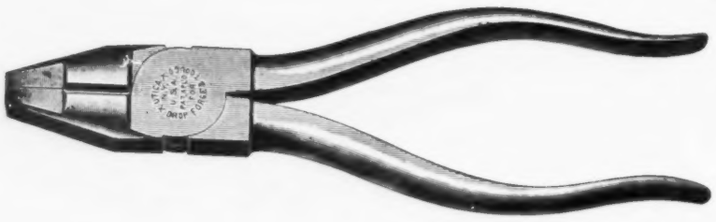

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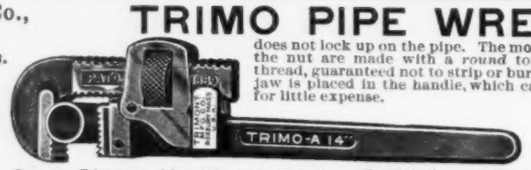

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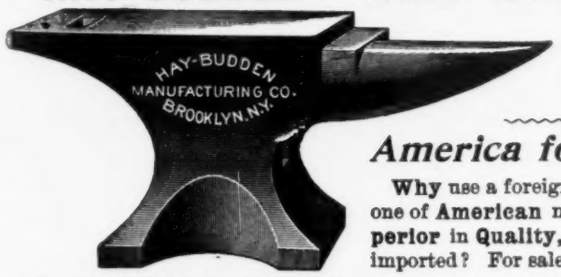

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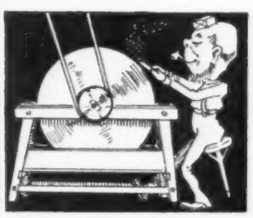

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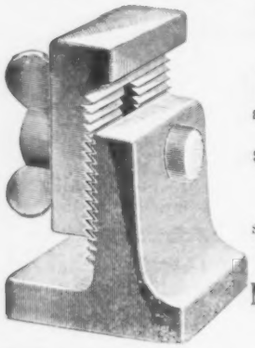

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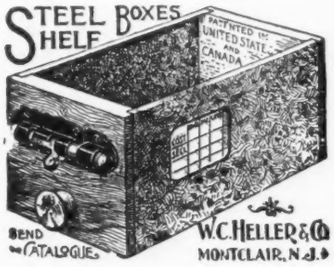

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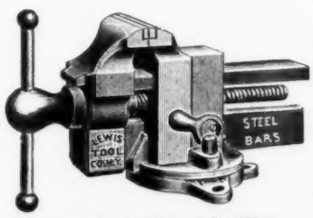

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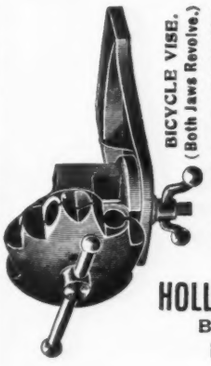

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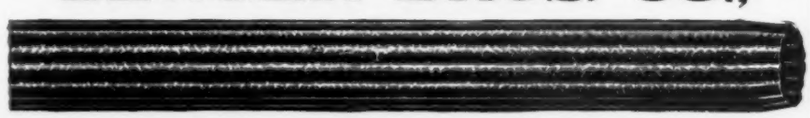

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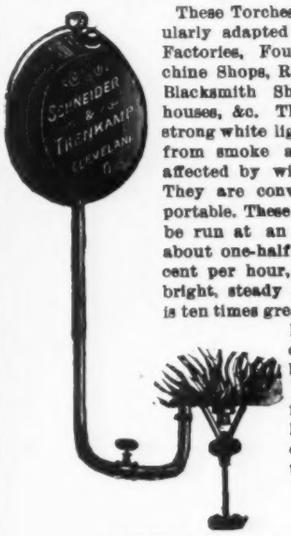

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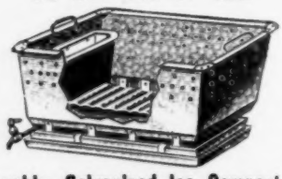

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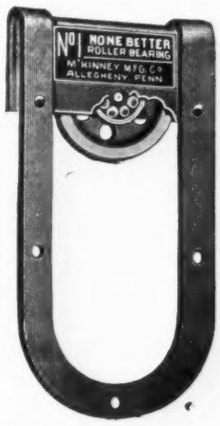

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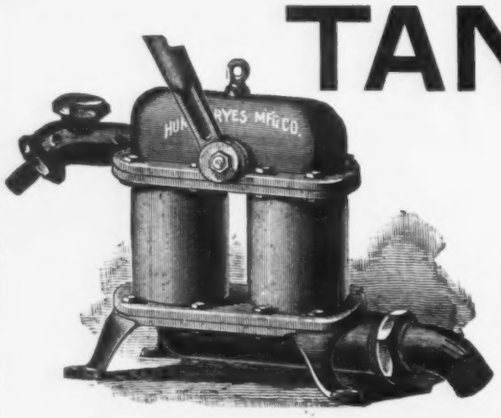

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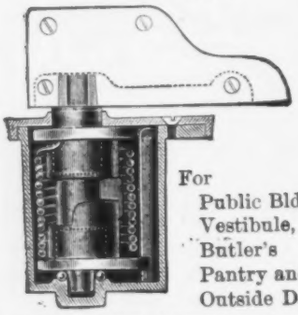

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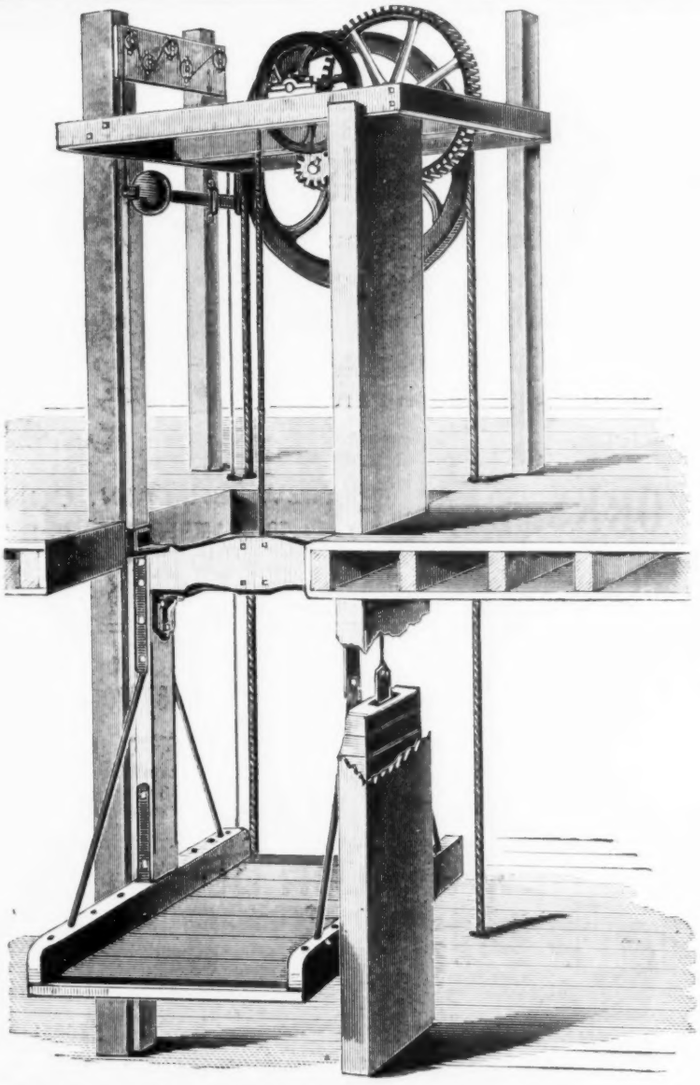

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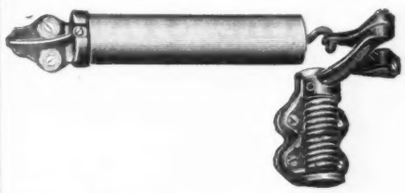

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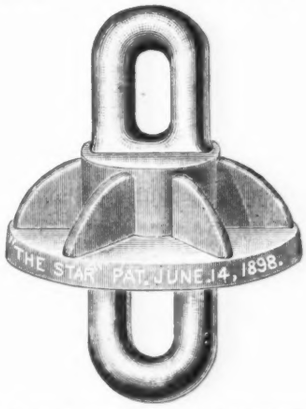

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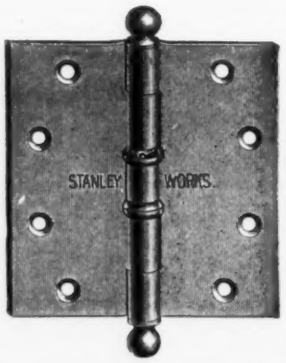

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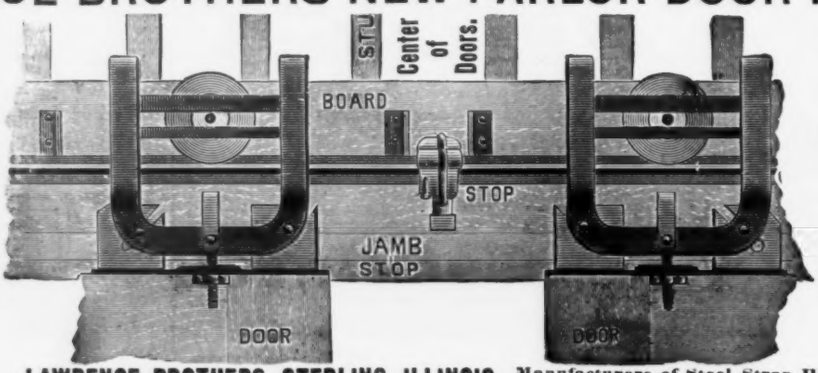

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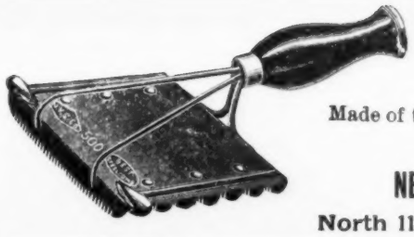

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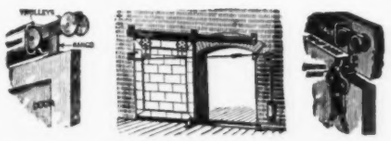

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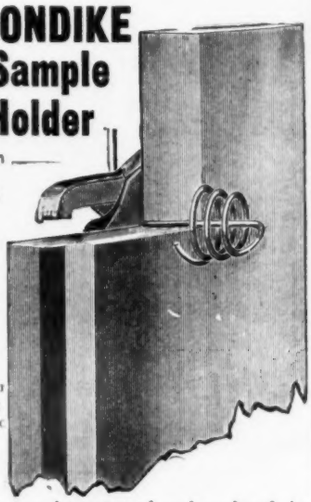

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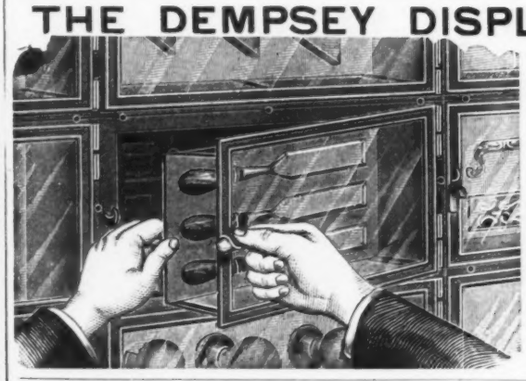

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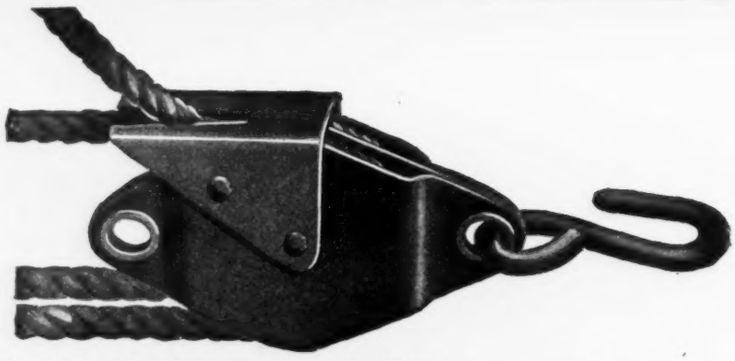

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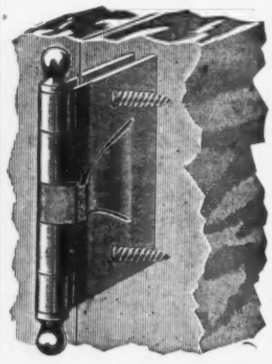

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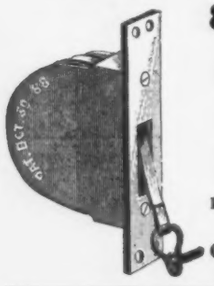

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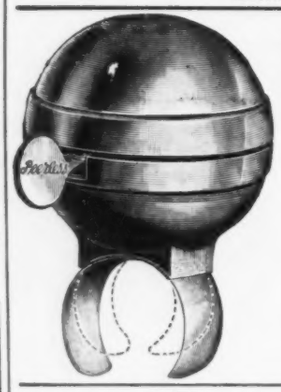

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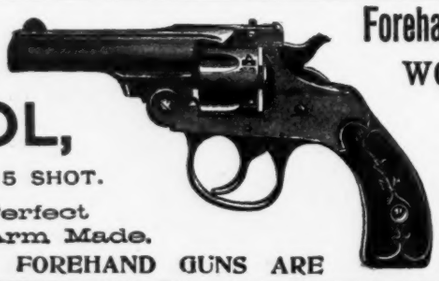

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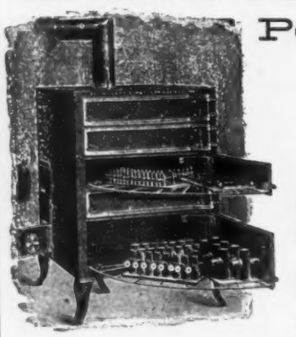

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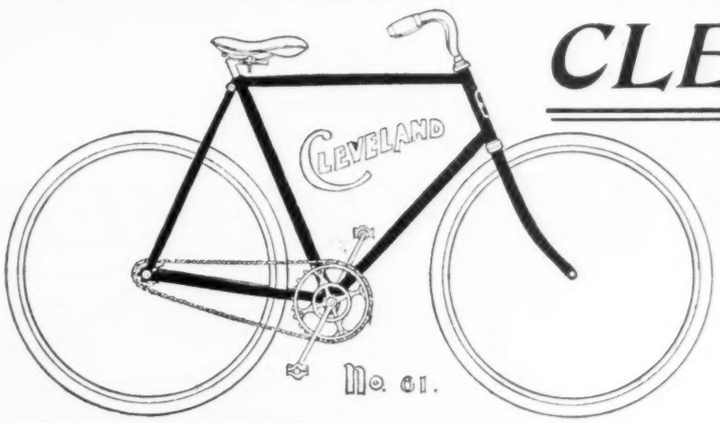

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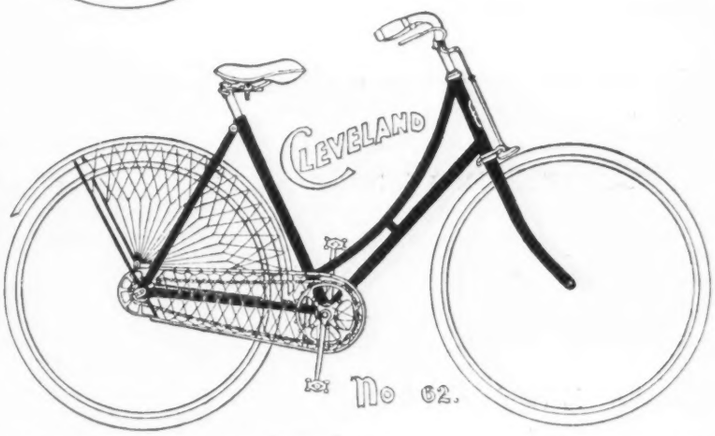

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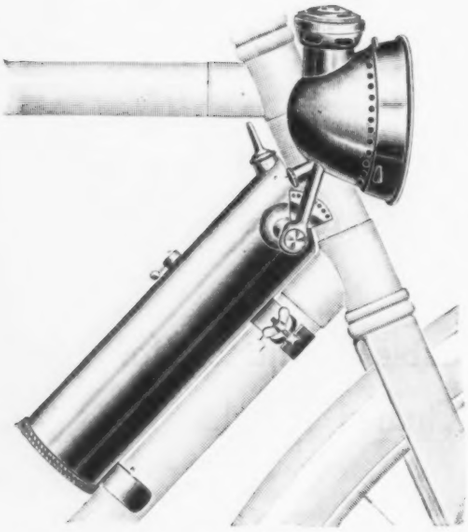

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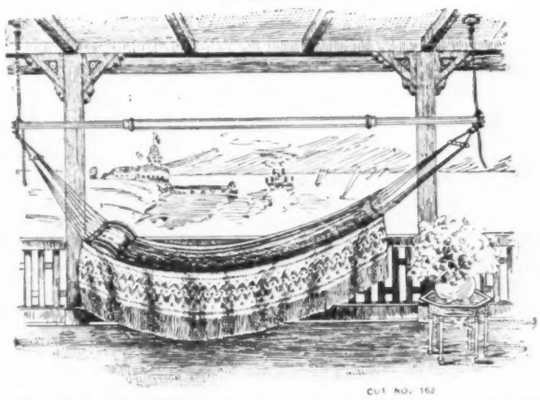

CUT NO. 162

The above Figure, No. 162, shows an Arawana slung from a Trapeze adjusted to its maximum extension as regards its suspension from the ceiling.

The Trapeze Suspension, as may be seen at a glance, is especially adapted to Veranda use, is adjustable to different sizes of Hammocks within its scope (from 6 ft. 3 in. to 11 ft.), and to giving different degrees of dip and heights of suspension. Every conceivable swinging motion is obtained without effort.

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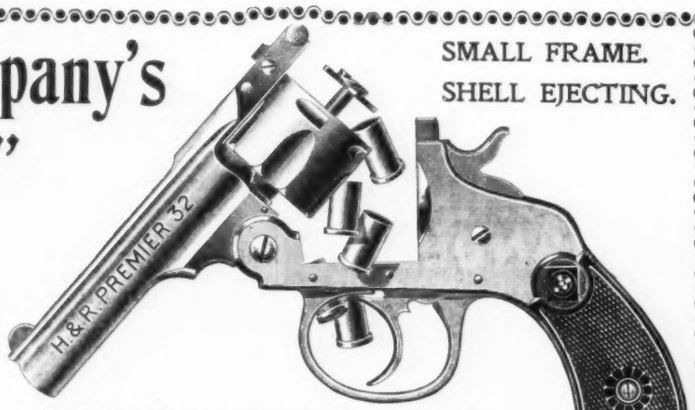

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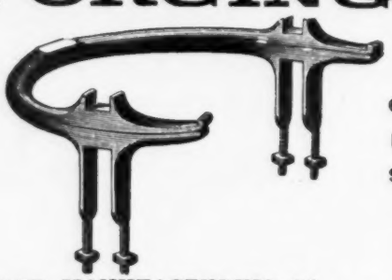

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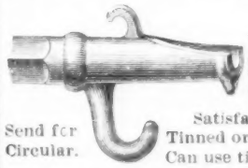

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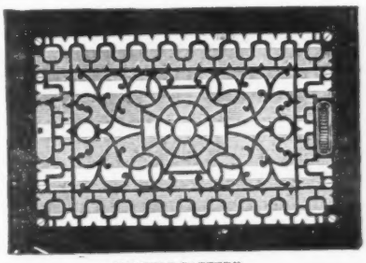

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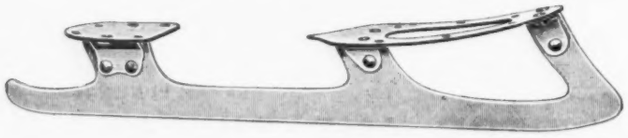

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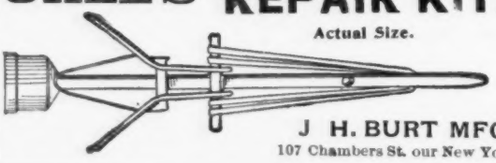

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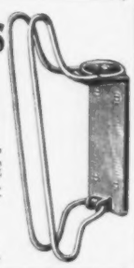

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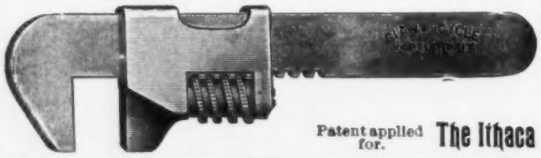

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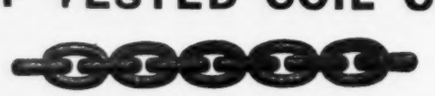

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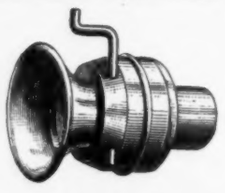

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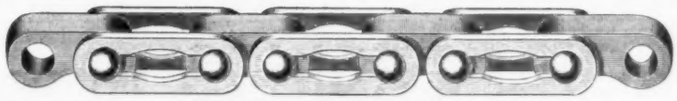

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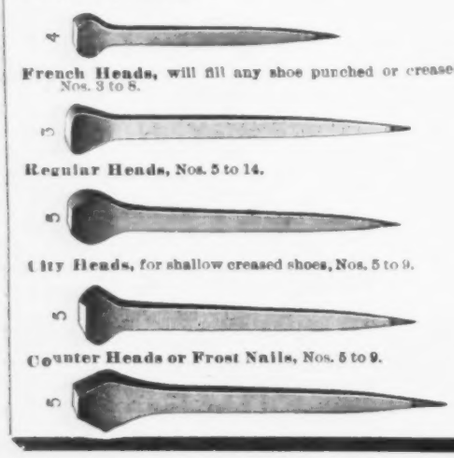

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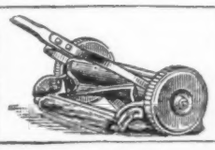

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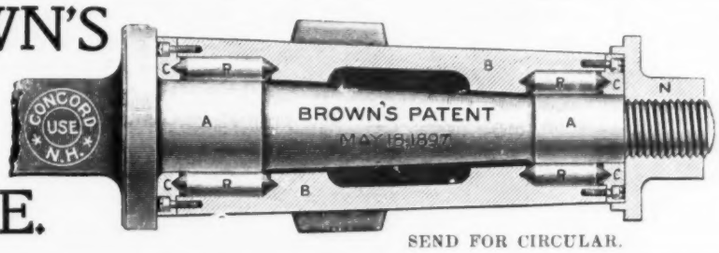

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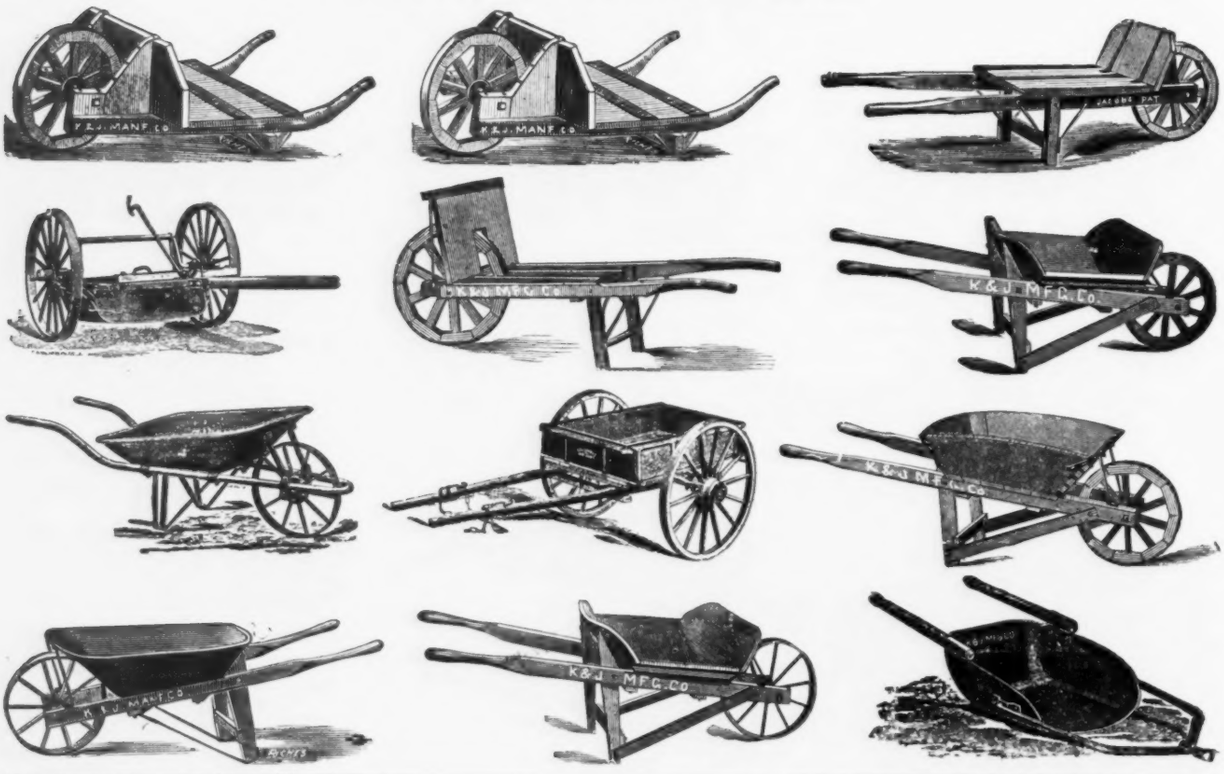

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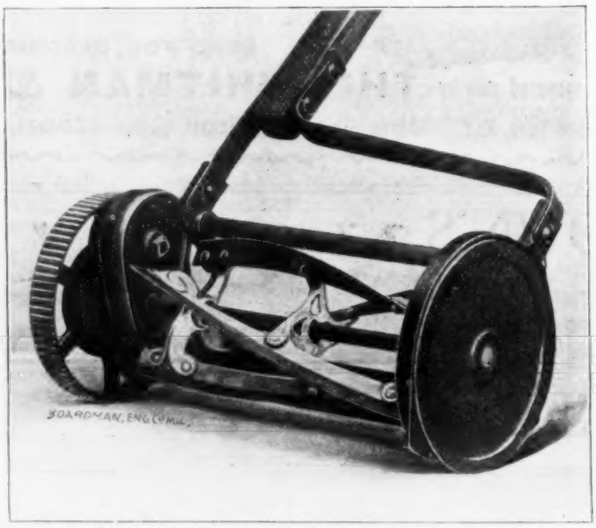

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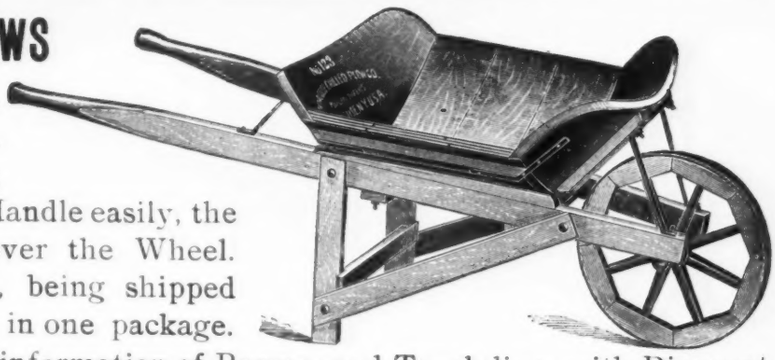

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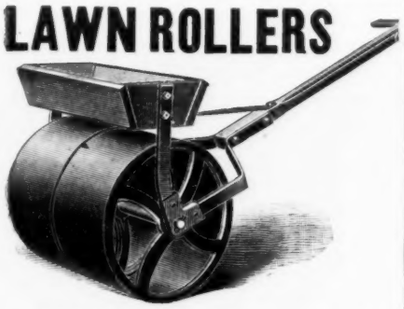

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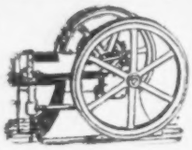

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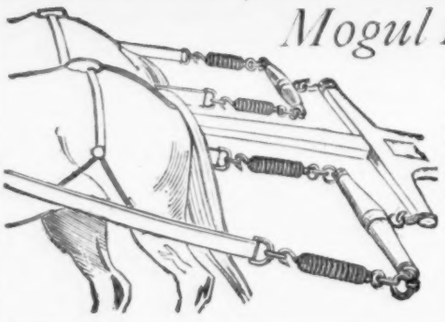

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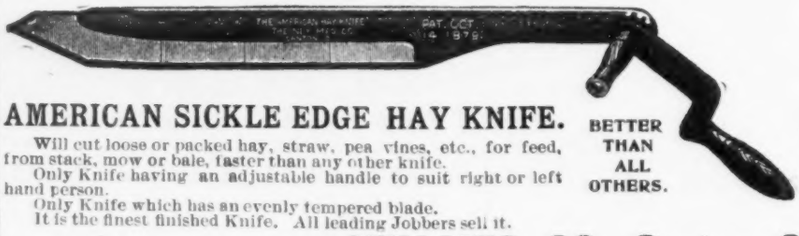

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Iowa Farming Tool Co., Ft. Madison, Iowa.
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Withington & Cooley Mfg. Co., Jackson, Mich.

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Baird, U. Machinery Co., Pittsburgh, Pa.
Clayton Air Compressor Works, 26 Cortlandt Street, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works, S. Norwalk, Ct.
Rand Drill Co., 100 Broadway, N. Y.

Air Rifles.
Markham Air Rifle Co., Plymouth, Mich.

Air Moving Machinery.
Howard & Morse, 45 Fulton, N. Y.

Alarm Tills.
Tucker & Dorsey Mfg. Co., Indianapolis

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Steel & Iron Metal Coating Co., West Chicago, Ill.

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Pittsburgh Reduction Co., Pittsburgh.
Scovill Mfg. Co., Waterbury, Conn.

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Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

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Reading Hardware Co., Reading, Pa.

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Magnolia Metal Co., 266-267 West St., N. Y.
Markle Lead Works, St. Louis, Mo.
Nassau Smelting & Refining Wks., 28th St. & North River, N. Y.
Reeves, Paul S., Philadelphia, Pa.
Standard Smelting Wks., 889 Canal St.

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American Steel & Wire Co., Chicago, Ill.
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Naugatuck Mfg. Co., Naugatuck, Conn.

Barb Wire and Fence.
American Steel & Wire Co., Chicago, Ill.
Dillon-Griswold Wire Co., Sterling, Ill.
Washburn & Moen Mfg. Co., Worcester.

Bar Iron.
Etna-Standard Iron & Steel Co., Bridgeport, Ohio.
Allentown Rolling Mill, Allentown, Pa.
Brown & Co., Inc Pittsburgh, Pa.
Burden Iron Co., Troy, N. Y.
Green Ridge Iron Works, Scranton, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Minnesota Iron & Steel Co., Minneapolis.
Mitchell, Tranter & Co., Cincinnati, O.
Sternbergh, J. H. & Son, Reading, Pa.

Basters.
Wallace Bros., Wallingford, Conn.

Bathtubs.
Horton Mfg. Co., Ft. Wayne, Ind.

Bearings.
Ball Bearing Co., Boston, Mass.

Bellows.
Scott, Geo. M., Chicago, Ill.

Bells and Gongs.
Bevin Bros. Mfg. Co., East Hampton.
Bristol Bell Co. Bristol, Conn.
Hill, N. N., Brass Co., E. Hampton, Ct.
Johnson, Geo., Catasauqua, Pa.
Starr Bros. Bell Co., Easthampton, Ct.

Belt Dressing.
Dixon, Jos. Crucible Co., Jersey City, N.J.

Belt Hooks.
Bristol Co. Waterbury, Conn.
Talcott, W. O., Providence, R. I.

Belt Lacing.
Malin & Co., Cleveland, O.

Belt Studs.
Hungerford, U. T., 121 Worth St., N. Y.

Belting.
Alexander Bros., 412 N. 3d, Phila.
Ames Sword Co., Chicopee, Mass.
Boston Belting Co., Boston, Mass.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
Shultz Belting Co., St. Louis, Mo.
Whitman & Barnes Mfg. Co., Akron, O.

Bench Stops.
Morrill, Chas., 35 Warren St., N. Y.

Bending Rolls.
Bertsch & Co., Cambridge City, Ind.
Hilles & Jones Co., Wilmington, Del.
New Doty Mfg. Co., Janesville, Wis.
Niles Tool Works, Hamilton, O.

Bicycles.
Ames & Frost Co., Chicago, Ill.
Crawford Mfg. Co., Hagerstown, Md.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.
Loxier, H. A. & Co., Cleveland, O.
National Cycle Mfg. Co., Bay City, Mich.
Remington Arms Co., Ilion, N. Y.
Sterling Cycle Works, Kenosha, Wis.
Supplee Hardware Co., Phila., Pa.

Bicycle Bells.—*See Bells and Gongs.*

Bicycle Chains.
Bridgeport Chain Co., Bridgeport, Ct.

Bicycle Grips.
Jones, L. M. Co., Winsted, Ct.

Bicycle Holders.
Snow Wire Works, Rochester, N. Y.

Bicycle Lamps.
Bridgeport Brass Co., Bridgeport, Conn.
Graham, John H. & Co., 113 Chambers St., N. Y.

Bicycle Machinery.
Bliss, E. W. Co., Brooklyn, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Garvin Mach. Co., Spring & Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.
Rudolphi & Krummel, Chicago, Ill.

Bicycle Parts.
American Pin Co., Waterbury, Conn.
Belden Machine Co., New Haven, Conn.
Hartford Machine Screw Co., Hartford, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Springfield Machine Screw Co., Springfield, Mass.

Bicycle Spokes.
Excelsior Needle Co., Torrington, Ct.

Bicycle Sundries.
Bevin Bros. Mfg. Co., E. Hampton, Mass.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Bristol Bell Co., Bristol, Conn.
Burt, J. H. Mfg. Co., Springfield, Mass.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hill, N. N. Brass Co., E. Hampton, Ct.
Hungerford, U. T., 121 Worth St., N. Y.
Mossberg Wrench Co., Attleboro, Mass.
Smith & Egge Mfg. Co., Bridgeport, Ct.

Bicycle Wrenches.
Ithaca Drop Forge Co., Ithaca, N. Y.
Mossberg Wrench Co., Attleboro, Mass.
Springfield Drop Forging Co., Springfield, Mass.

Bird Cages.
Hendryx, Andrew B. Co., New Haven, Conn.

Bits.
Conn. Valley Mfg. Co., Centerbrook, Ct.
Imperial Bit & Snap Co., Racine, Wis.

Bits and Braces.
Fray, Jno. S. & Co., Bridgeport, Conn.

Blind Hinges.
Clark Mfg. Co., Buffalo, N. Y.

Blocks, Tackle.
Boston & Lockport Block Co., Boston.
Burr Mfg. Co., Cleveland, Ohio.
Fulton Iron & Eng. Wks. Detroit, Mich
Lane Bros. Co., Poughkeepsie, N. Y.
Union Hardware Co., Torrington, Conn.

Blowers.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co. Buffalo, N. Y.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Sturtevant, B. F. Co., Boston, Mass.
Wilbraham-Baker Blower Co., Phila., Pa.

Boat Hardware.
Hungerford, U. T., 121 Worth St., N. Y.

Boiler Makers' Machinery.
Prentice Bros., Worcester, Mass.

Boiler Plates.
Lukens Iron & Steel Co., Coatesville, Pa.
Seidel & Hastings Co., Wilmington, Del.

Boiler Tubes.
Hungerford, U. T., 121 Worth St., N. Y.
National Tube Works Co., McKeesport, Pa.

Boilers, Steam.
Babcock & Wilcox Co., 30 Cortlandt St.
Bay State Iron Works, Erie, Pa.
Cahall Sales Dept., Pittsburgh, Pa.
Harrison Safety Boiler Wks., Phila., Pa.
Pollock, W. B. & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.
Chambers Bros. Co., Philadelphia.
Helwig Mfg. Co., St. Paul, Minn.
Porter, H. K., Boston, Mass.

Bolt and Nut Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
Burdict, O. C., Buffalo, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
National Machinery Co., Tiffin, Ohio.

Bolts.
American Bolt Co., Lowell, Mass.
Anthony Bates Mch. Co., Worcester, Mass.
Blake & Johnson, Waterbury, Conn.
Cincinnati Screw & Tap Co., Cincinnati, Ohio.
Dunham Nut Co., Unionville, Conn.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Works, Rockford, Ill.
Shelton Co., Birmingham, Conn.
Smith, Thos. Co., Worcester, Mass.
Sternbergh, J. H. & Son, Reading, Pa.

Books.
Williams, David, Company, 232-238 William Street, N. Y.

Box Fixtures.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Box Straps and Corners.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
Quincy Hdw. Mfg. Co., Quincy, Ill.

Boxes, Hdw, Shelf, &c.
Green, A. H. & Co., 22 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va.

Brackets, Shelf.
Atlas Mfg. Co., New Haven, Conn.

Brass and Copper.
Ansonia Brass & Copper Co., N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Davol, John & Sons, 100 John, N. Y.
Hungerford, U. T., 121 Worth St., N. Y.
Hussey, C. G. & Co., Pittsburgh Pa.
Plume & Atwood Mfg. Co., 29 Murray St., N. Y.
Randolph & Clowes, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods.
Hungerford, U. T., 121 Worth St., N. Y.

Brass and Copper Wire.
Hungerford, U. T., 121 Worth St., N. Y.

Brass Butt Hinges.
Hungerford, U. T., 121 Worth St., N. Y.
Tiebout, W. & J., 16 & 18 Chambers.

Brass Butts.
Hungerford, U. T., 121 Worth St., N. Y.

Brass Founders.
Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

Brass Goods.
Brass Goods Mfg Co., 88 Chambers.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
Hungerford, U. T., 121 Worth St., N. Y.

Breast Drills.
Fray, Jno. S. & Co., Bridgeport, Conn.

Bridge Builders.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.

Bronze, Manganese.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze (Tobin).
Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y.

Brushes and Brooms.
Hendee Wire Brush Co., Milwaukee, Wis
Osborn Mfg. Co., Cleveland, O.

Buckets, Rubber.
Cleveland Galvanizing Wks., Cleveland

Buggies.
Parry Mfg. Co., Indianapolis, Ind.

Builders' Hardware.
Norwalk Lock Co., So. Norwalk, Conn.
Penn Hdw. Co., Reading, Pa.
Reading Hdw. Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York.
Stanley Works, New Britain, Conn.
Taylor & Boggis Fdry Co., Cleveland, O.

Bulldozers
Williams, White & Co., Moline, Ill.

Burnt Leather.
Ensworth, L. L. & Son, Hartford, Conn.

Butchers' Tools.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Harrington, Dexter & Son, Southbridge, Mass.
Hoffman, C. & A., Phila., Pa.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind.

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hartley & Graham, 313 & 315 Broadway, New York.
Hungerford, U. T., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.

Casters.
Standard Caster & Wheel Co., 316-326 E. 23d St., N. Y.
Schriver, O. P. Co., Cincinnati, Ohio.
Tucker & Dorsey Mfg. Co., Indianapolis.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N.Y.

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co. 1131 Broadway, N. Y
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McLain, J. H. Co., Canton, O.
McNeal Pipe & Foundry Co., Philadelphia, Pa.
Martin, Wm. R., Lancaster, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's L. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg Co., Cleveland, O.
Taylor & Boggis Fdry Co., Cleveland, O.
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
King & Andrews Co., Chicago, Ill.
Livermore, Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

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Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Schmidt, Jno. C. & Co., York, Pa.
Turner & Seymour Mfg. Co., Torrington, Conn.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Christmas Tree Holders.
Penn Hardware Co., Reading, Pa.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whilton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Rust, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., 121 Worth St., N. Y.

Copper Ware.
Rochester Stamping Works, Rochester, N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Cornice Brakes.
Bertsch & Co., Cambridge City, Ind.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Railway Supply Co., St. Louis, Mo.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Jones & Laughlins, Ltd. Pittsburgh, Pa.
Sennett Geo. B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Box, Alfred & Co., Philadelphia, Pa.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
New York Stamping Co., Brooklyn, N. Y.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Illinois Cutlery Co., Decatur, Ill.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cutting Off Tools
Hill, Hugo Tool Co. Anderson, Ind.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., Beaver, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh
Wilson & Smith, Worcester, Mass.

Display Doors
Dempsey Mfg. Co., Cleveland, O.

Dog Collars.
Union Hardware Co., Torrington, Conn.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Lammer Mfg. Co., Pittsburg, Pa.
Norton Door Check & Spring Co., Boston.
Russell & Erwin Mfg. Co., New York.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass
Wilson Mfg. Co., 149 Cedar St., N. Y.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N. Y.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Blundell, Henry & Co., Providence, R. I.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Dwight Slate Machine Co., Hartford, Ct.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Langeller Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.

Drilling Machines, Automatic.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Gould & Eberhardt, Newark, N. J.

Dripping Pans.
Piligrove Bros. & Co., Trenton, Ohio.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Dean, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn
Merrell Bros., Brooklyn N. Y.
Williams, White & Co., Moline, Ill.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Hanson & Van Winkle Co., Newark, N. J.
Westinghouse Electric & Mfg Co., Pittsburgh, Pa.
Zucker & Levett & Loeb Co., 526-540 W. 25th St., N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Standard Co., Boston, Mass

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.

Electrical Repairing.
Cleveland Armature Works, Cleveland, Ohio.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg, Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Schofield & Co., Freeport, Ill.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
New Castle Engineering Works, Pittsburgh, Pa.
Phillips, F. M. Sons, Phila., Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Lambert Gas & Gasoline Engine Co., Indianapolis, Ind.
New Era Iron Works, Dayton, Ohio.
Otto Gas Engine Co., Phila. Pa.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Bay State Iron Works, Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Lane & Bodley Co., Cincinnati, O.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Todd, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engine and Boiler Supplies.
Sherwood Mfg. Co., Buffalo, N. Y.

Engine Stops.
Monarch Mfg. Co., 39 Cortlandt St., N. Y.

Engravers.
Mugford, A., Hartford, Conn.

Exhibition, Export.
International Land & Exhibition Co., New York.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exterminators, Insect.
Smith, D. S. & Co., Utica, N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fence Ratchets.
Schriver, O. P. & Co., Cincinnati, O.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Parnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

File Cutting Machines.
Hess Machine Works, Phila., Penna.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Finished Castings.
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Union Mining Co. Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Phila., Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Ely Hoe & Fork Co., St. Johnsbury, Vt.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign, Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Bultman, F. H. & Co., Cleveland, O.
Clough, R. M., Toland, Ct.
Gould & Eberhardt, Newark, N. J.
Whilton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R.
Florence Machine Co., Florence, Mass.

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Northampton Emery Wheel Co., Leeds Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Standard Machine Co., Holyoke, Mass.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hardware Co., Torrington Conn.

Hack Saw Blades.
Goodell Bros. Co., Greenfield, Mass.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.
Robertson, A. R., Boston, Mass.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn

Hand Milling Machines.
Costlio, J. E. Machine Works, Brooklyn, N. Y.

Hangers, Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co., Aurora Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.
Jones & Laughlins, Ltd., Pittsburgh, Pa.

Hangers; Storm Window and Screen.
Phoenix Mfg. Co., Milwaukee, Wis.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Chas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Penn Hardware Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
Hills, Edwin, Plainville, Conn.
New Britain Hdw. Mfg. Co., New Britain
North Bros. Mfg. Co., Philadelphia, Pa.
Parks & Parks, Troy, N. Y.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hat Polishers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Boyley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Box, Alfred & Co., Phila.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Dunn, Jas. P., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rochester Stamping Works, Rochester, N. Y.
Rome Mfg Co., Rome, N. Y.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.
Botcnkiss, E. S., Bridgeport, Conn.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Coupling.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Household Specialties.
Parks & Parks, Troy, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Gerlach, Peter & Co., Cleveland, O.
Hills, Edwin, Plainville, Conn.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur G. Co., Boston, Mass.
Lidenberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila., Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.

Jewelry.
Myers, S. F. Co., 48-50 Maiden Lane, N. Y.

Job Lots, Hardware.
Chicago House Wrecking Co., Chicago, Ill.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Knife Sharpeners.
Clark Mfg. Co., Mollne Ill.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Hills, Edwin, Plainville, Conn.
Logan & Strobridge Iron Co., New Brighton, Pa.
Tucker & Dorsey Mfg. Co., Indianapolis.

Locks and Knobs.
Norwalk Lock Co., So. Norwalk, Conn.
Penn Hardware Co., Reading, Pa.
Reading Hdw. Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N.J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Coulter & McKenzie Mach. Co., Bridgeport, Conn.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Fitchburg Automatic Drilling Attachment Works, Phila., Pa.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Kelly, R. A. Machine Co., Xenia, Ohio.
King & Walker Co., Madison, Wis.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Poulterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Rudolphi & Krummel, Chicago, Ill.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Cincinnati Screw & Tap Co., Cincinnati, Ohio.
Hartford Mch. Screw Co., Hartford, Ct.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., 121 Worth St., N. Y.

Man Hole Forming Tools.
Haworth Mfg. Co., Liberty, Ind.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N. Y.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milk Cans.
Shepard, Sidney & Co., Buffalo, N. Y.

Milling Attachment for Lathes.
Adison Mfg. Co., Phila., Pa.

Milling Machines.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gilem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill
Howard & Morse, 45 Fulton St., N. Y.

Molding Machines.
Pridmore, Henry E., Chicago, Ill.

Motor Fans.
Hungerford, U. T., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Atherton, Jesse, Auburn, R. I.
Bates Machine Co., Joliet, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.

Nail Sets.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levitt & Loeb Co., 526-530 W. 25th St., N. Y.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.
Silver Lake Co., Boston Mass.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

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Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Walter & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Erdle & Schenck, Rochester, N. Y.
Harrington & King Perforating Co., Chicago, Ill
Hungerford, U. T., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Haik & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Hickman, Williams & Co., Chicago, Ill.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Shenango Valley Steel Co., New Castle, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pincers.
Washington Tool Co., Owatonna, Minn.

Pipe, Bent.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.
Trimont Mfg. Co., Roxbury, Mass.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, F. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
Millar, C. & Son, Utica, N. Y.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Pennsylvania Tube Works, Pittsburgh, Pa.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N. Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Myers, S. F. Co., 48-50 Malden Lane, N. Y.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Mitchell, Tranter & Co., Cincinnati, O.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Poultry Fencing.
De Kalb Fence Co., De Kalb, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wals & Roos Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co. So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Rudolphi & Krummel, Chicago, Ill.
Woolley Fdry. & Mch. Works, Anderson Ind.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T Mfg. Co., Hamden, Conn
Smith, Seymour & Son, Oakville, Conn.

Pruning Shears.
Smith, Seymour & Son, Oakville, Conn.

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pump Chains.
Cleveland Galvanizing Wks., Cleveland.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
Schriver, O. P. & Co., Cincinnati, O.

Punches, Conductors.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Hilles & Jones Co., Wilmington, Del.
King & Walker Co., Madison, Wis.
Long & Allstatter Co., Hamilton, Ohio.
Mersick, C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis
Stiles & Parker Press Co., Brooklyn, N. Y.
Wals & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Razor Strops.
Razorine Mfg Co., 134 Pearl St., N. Y.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Sandwich Enterprise Co., Sandwich, Ill.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Gurney Refrigerator Co., Fond du Lac, Wis.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark, N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N.Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham, 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., 121 Worth St., N. Y.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.
Wilder, J. K. & Sons, Monroe, Mich.

Rolling Machines.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Keuffel & Esser Co., 127 Fulton St., N. Y.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff Novelty Co., Gibsonburg, O.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Foster, H. H. Co. of Vt.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Logan & Strouse Iron Co., New Brighton Pa.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Morrill, Chas., 35 Warren St., N. Y.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Saw Vises.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scales.
American Cutlery Co., Chicago, Ill.
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Grant, Robt. & Co., 253 Broadway, N. Y.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Phillips, A. J. Co., Fenton, Mich.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Gay & Parsons, Augusta, Me.
Goodell Bros. Co., Greenfield, Mass.
Millers Falls Co., 93 Reade St., N. Y.
New England Specialty Co., No Easton, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks, Brooklyn, N. Y
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Hartford Mach. Screw Co., Hartford, Ct.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Cincinnati Screw & Tap Co., Cincinnati, Ohio
Franklin Moore Co., Winsted, Conn.
Hartford Mch. Screw Co., Hartford, Ct.
Haskell, Wm. H. Mfg. Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Semi-Steel.
Birmingham Iron Foundry, Birmingham.
King & Andrews Co., Chicago, Ill.

Shade Roller Fixtures
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co., Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Mitchell, Tranter & Co., Cincinnati, O.
Passaic Rolling Mill Co., Paterson, N. J.
The Phoenix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Kelly, R. A. Mch. Co., Xenia, Ohio.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheathing.
Cabot, Samuel, Boston, Mass

Sheet and Bolt Copper.
Hungerford, U. T., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Morley Bros., Saginaw, Mich.

Shelving.
Warren, J. D. Mfg. Co., Chicago, Ill.

Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Union Hardware Co., Torrington, Conn.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners.
Union Hardware Co., Torrington, Conn

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Snow Shovels.
Phillips, A. J. Co., Fenton, Mich.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Marvin Lead Works, St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., 121 Worth St., N. Y.

Soles.
Baxter, Schenkelberger & Co., Boston.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N. Y.

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Speed Limits.
Monarch Mfg. Co., 39 Cortlandt St., N. Y.

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Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O
Dunbar Bros., Bristol, Conn.
Lord Bros. Mfg. Co., Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Hoffman Hinge Co., Cleveland, Ohio.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N.Y.

Stamping, Sheet Metal.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich.
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
D'Este & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
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Jones, B. M. & Co., Boston.

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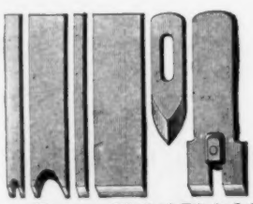

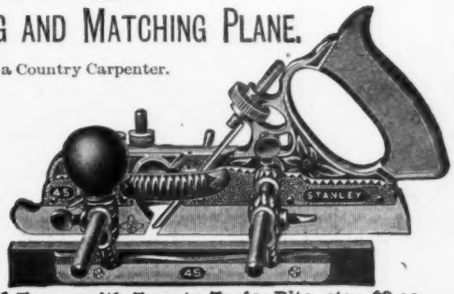

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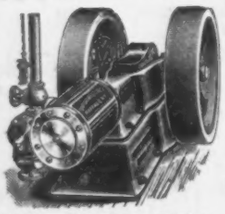
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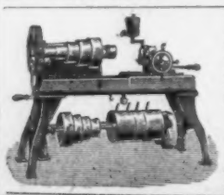
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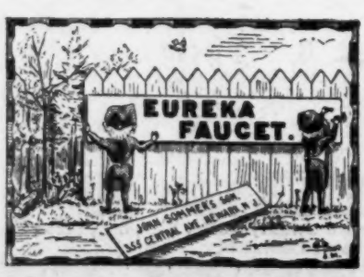

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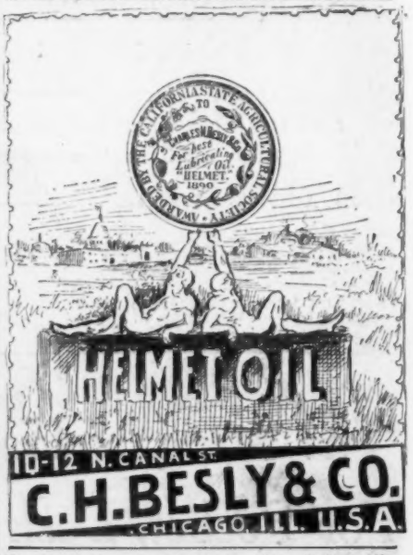

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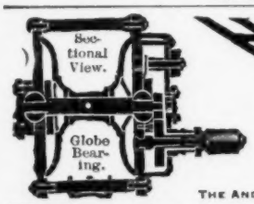

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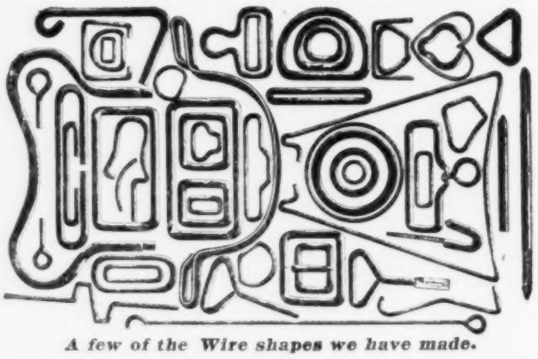

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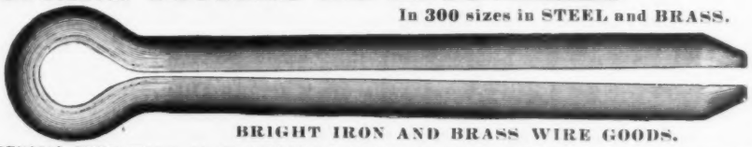

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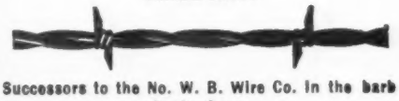

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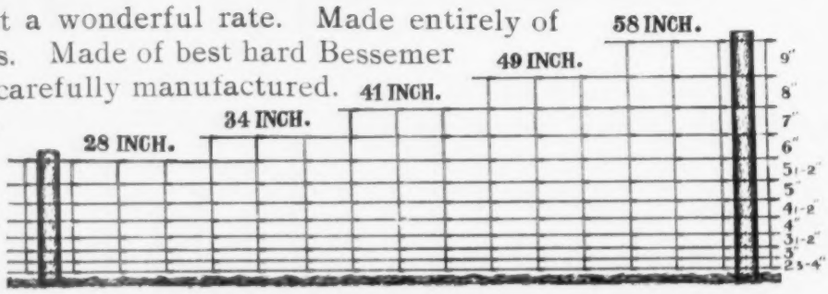

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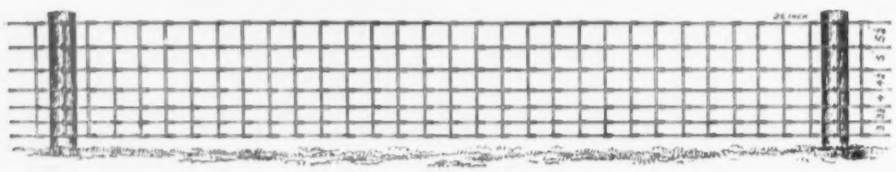

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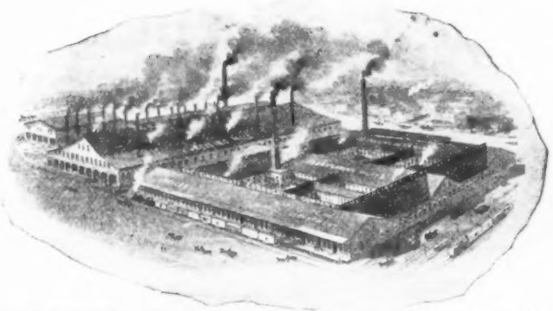

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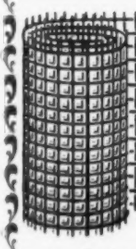

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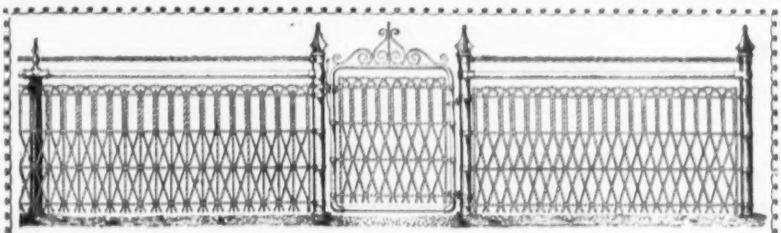

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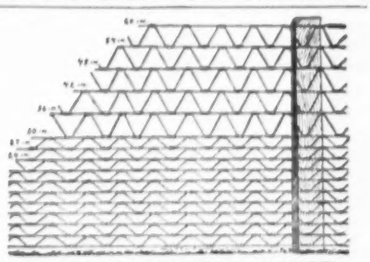

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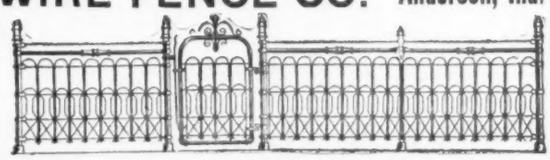

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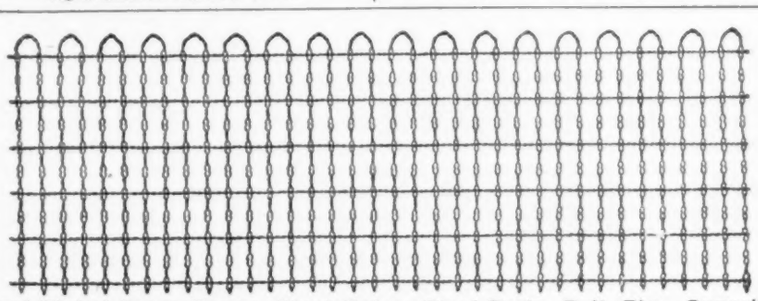

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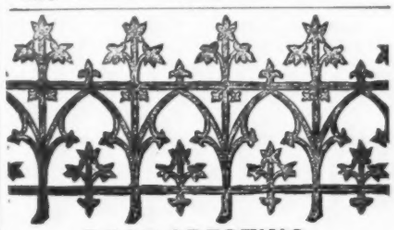

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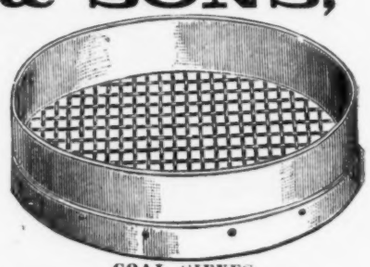

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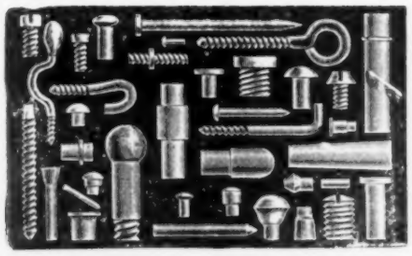

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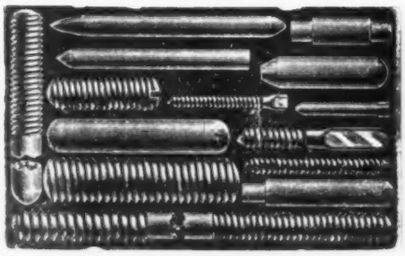

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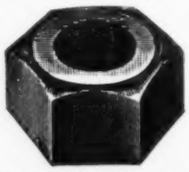

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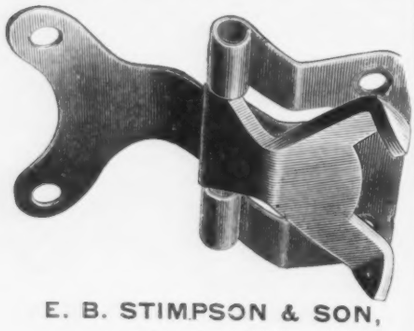

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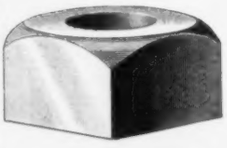

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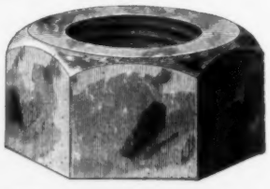

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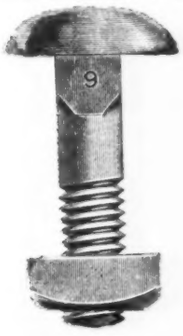

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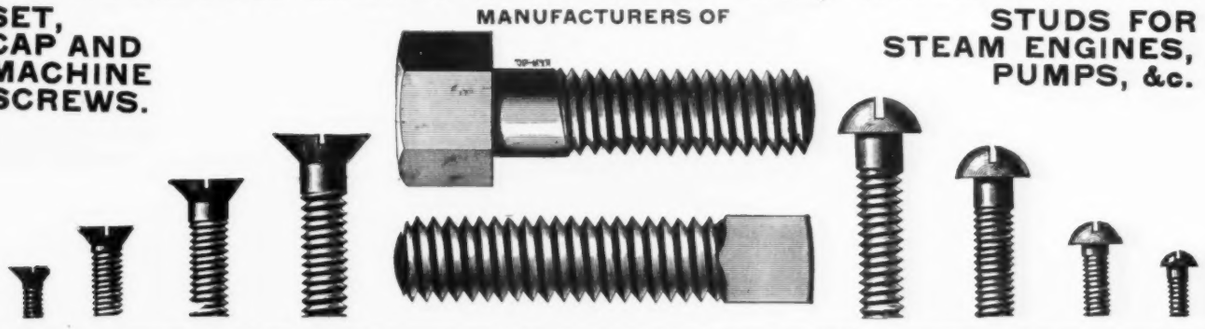

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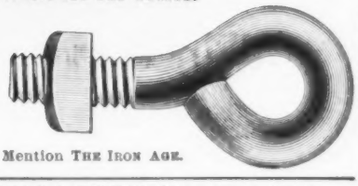

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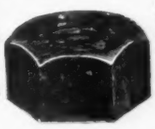

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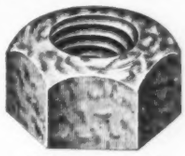

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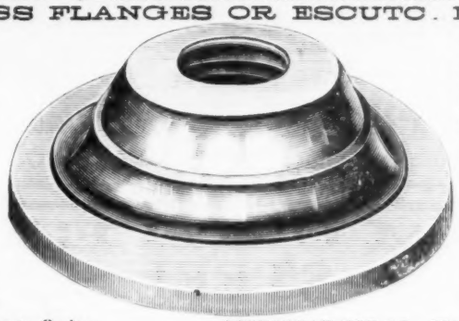

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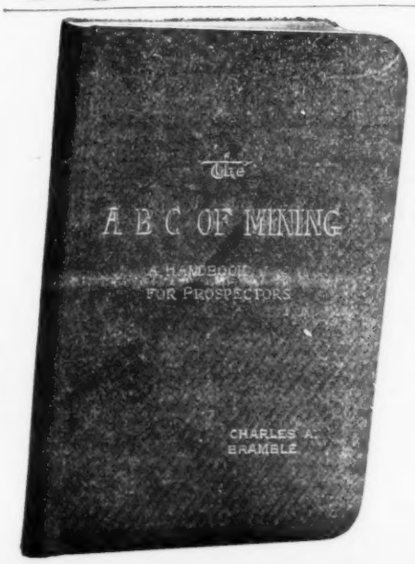

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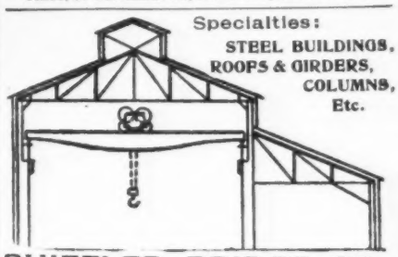

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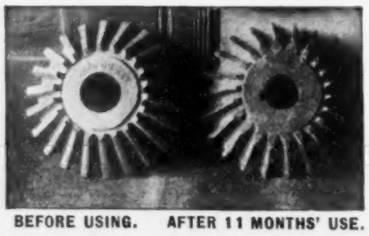
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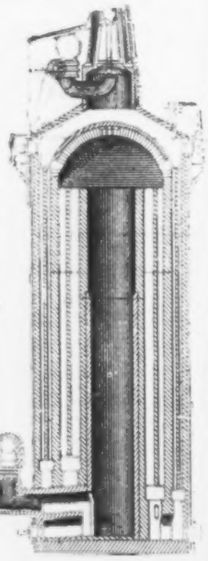

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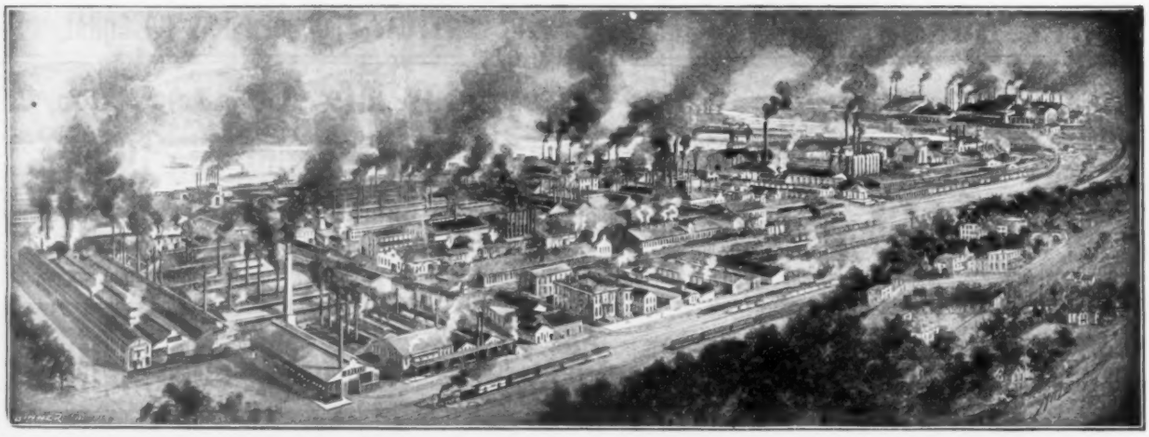

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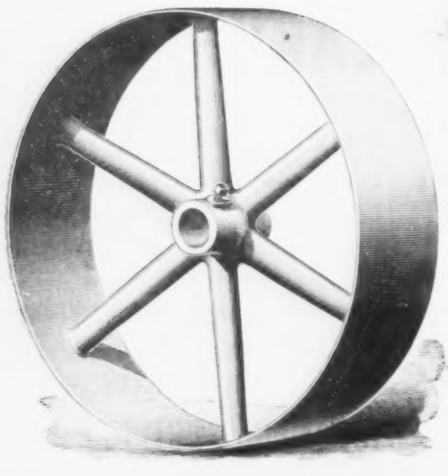

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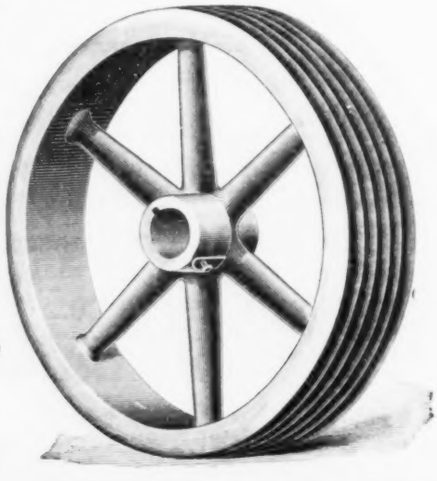

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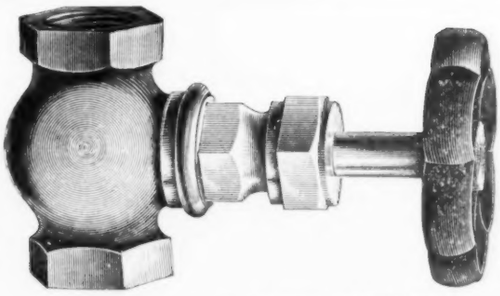

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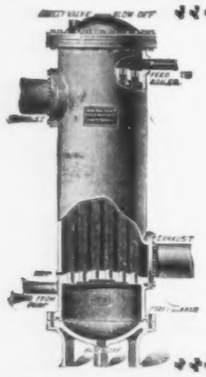

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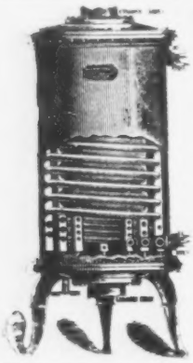

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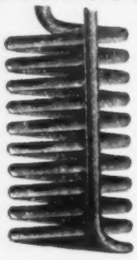

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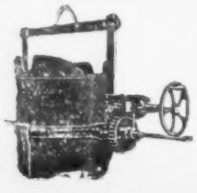

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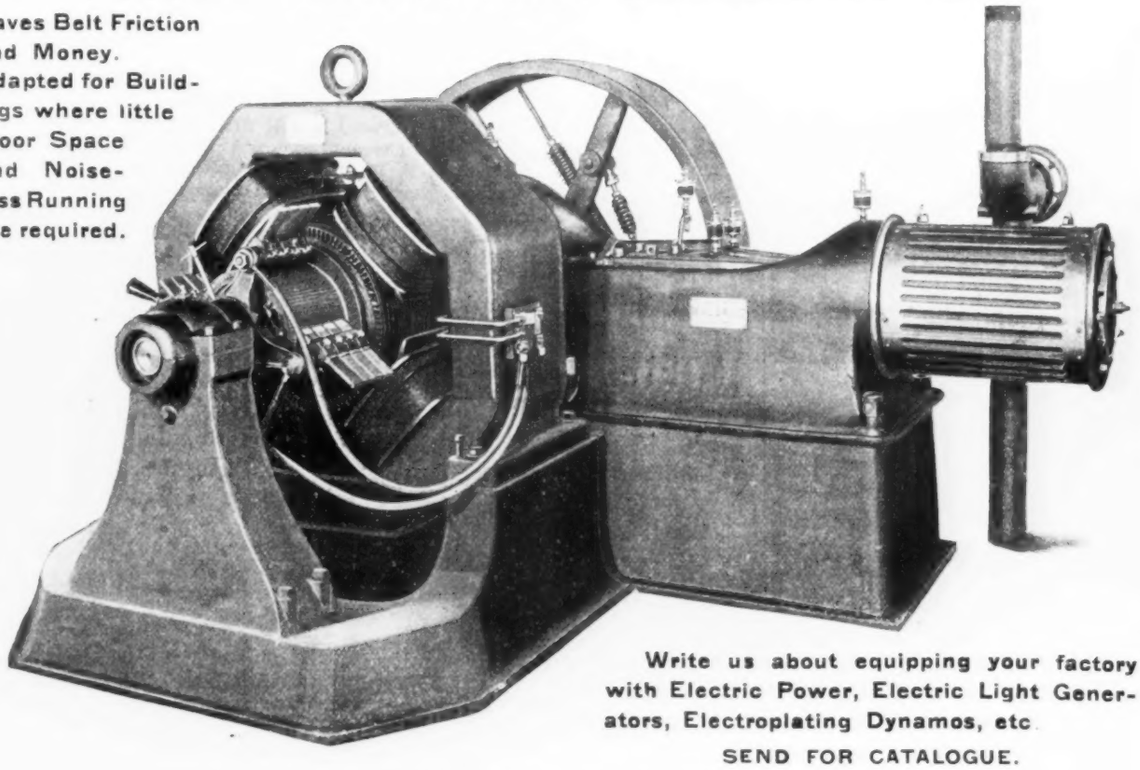

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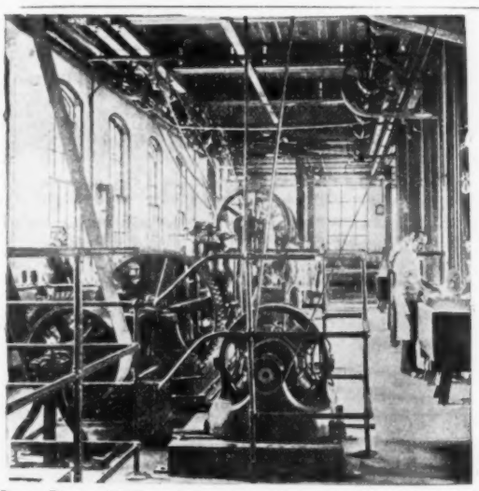

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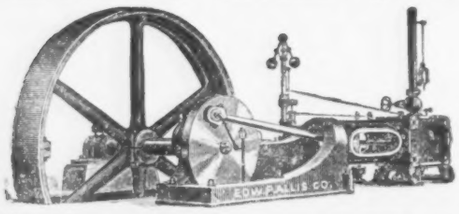

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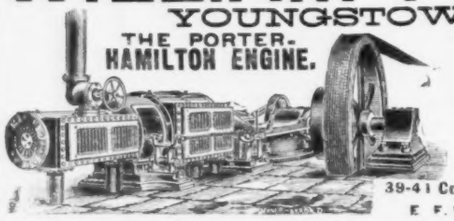

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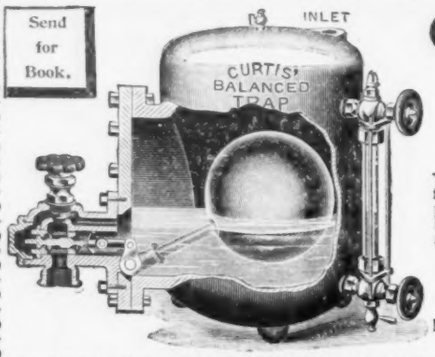

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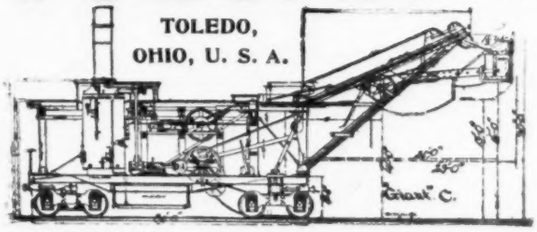

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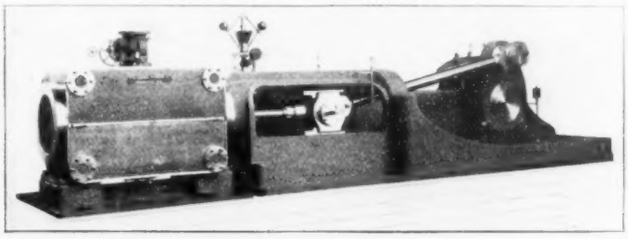

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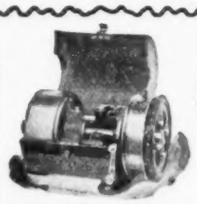

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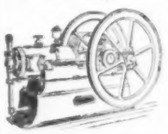

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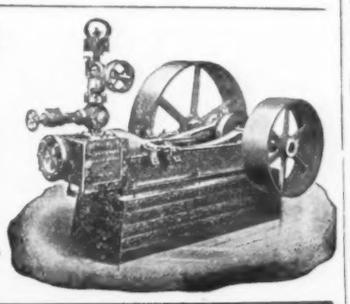

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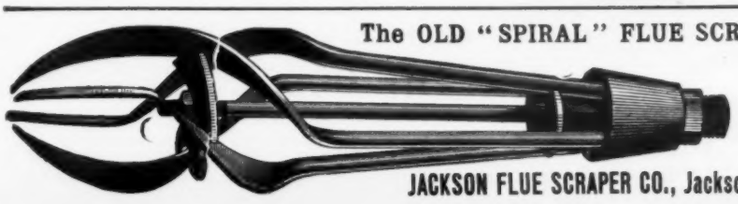

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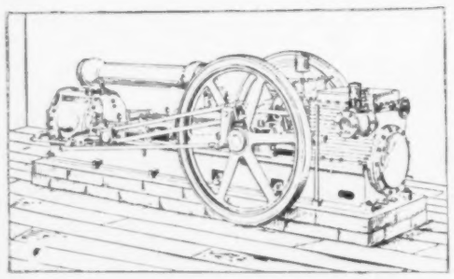

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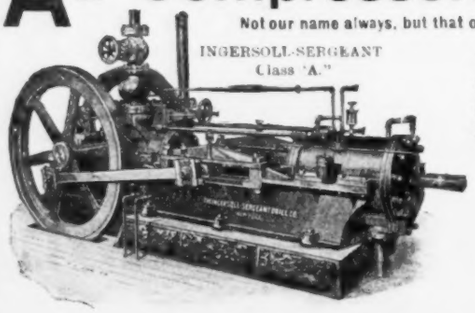

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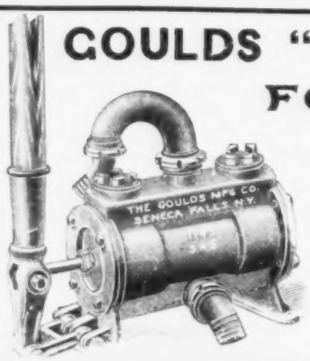

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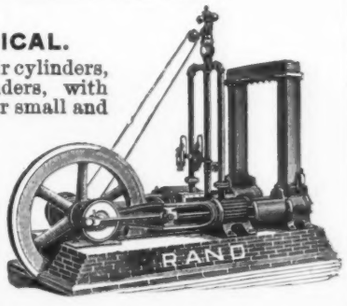

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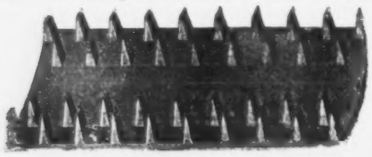

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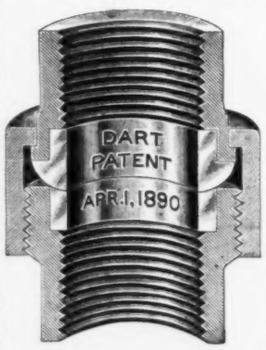

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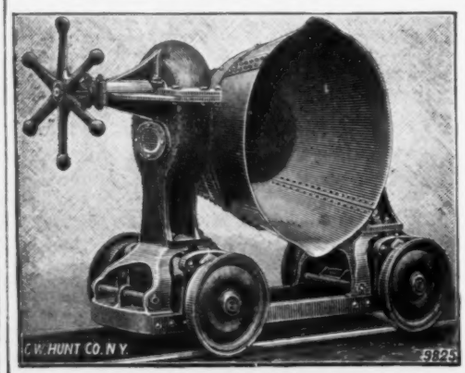

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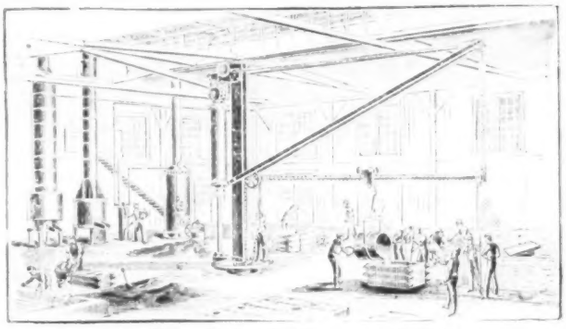

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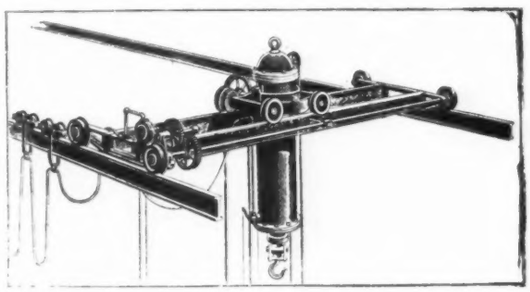

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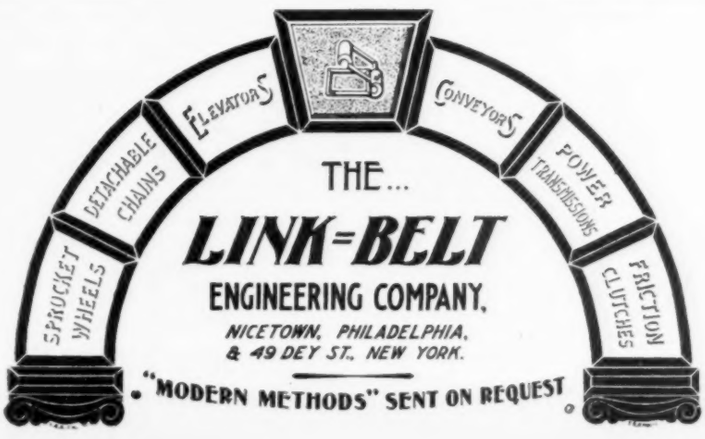

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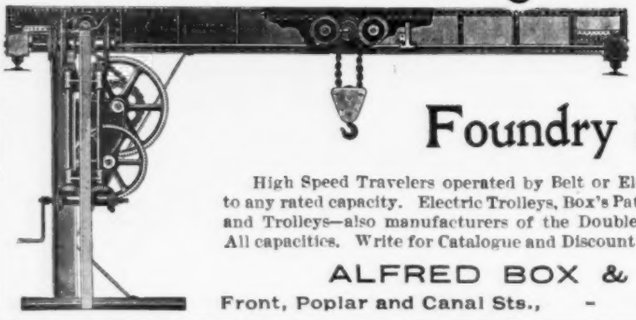

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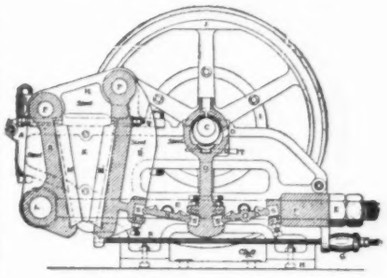

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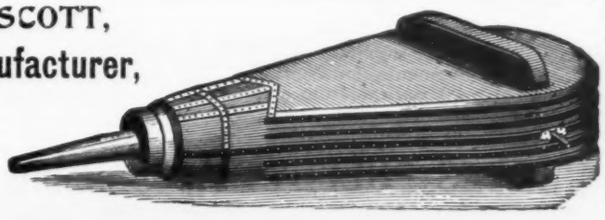

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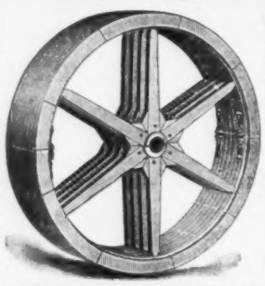

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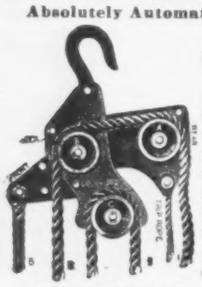

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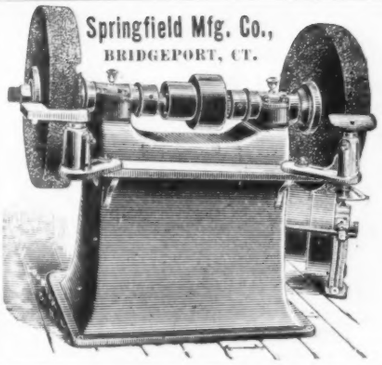

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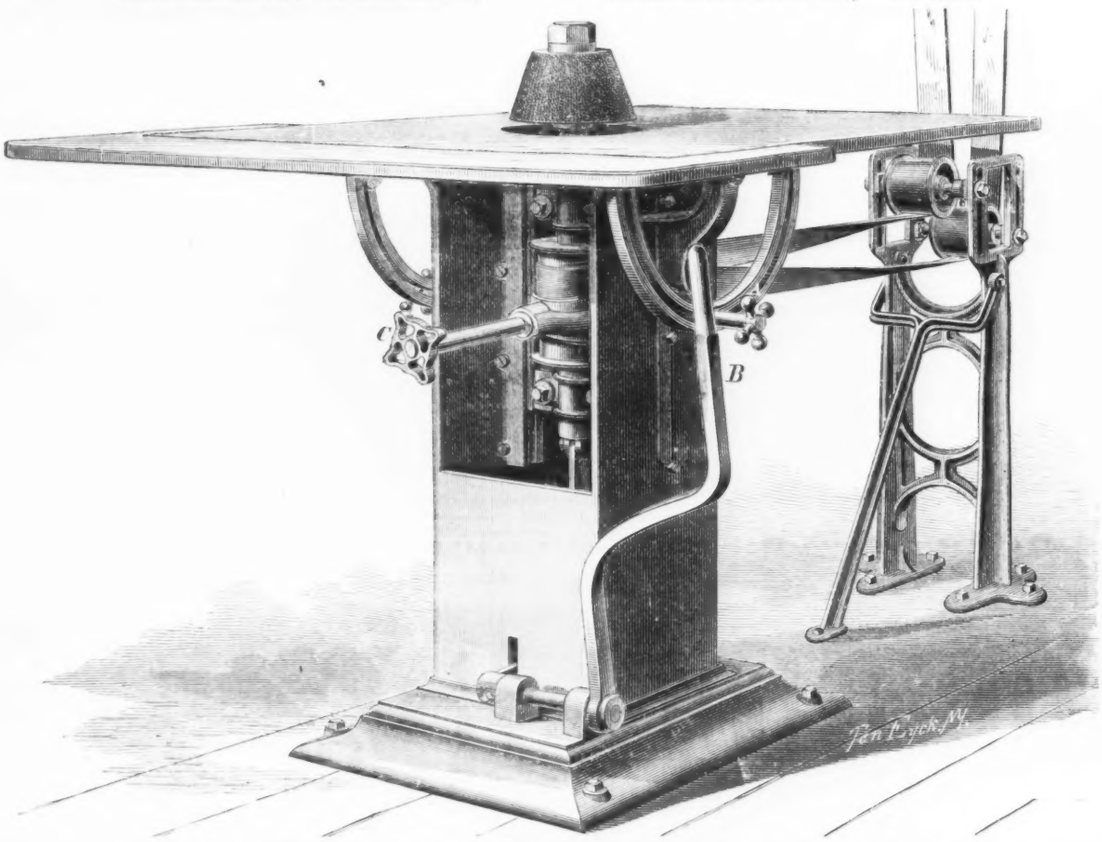

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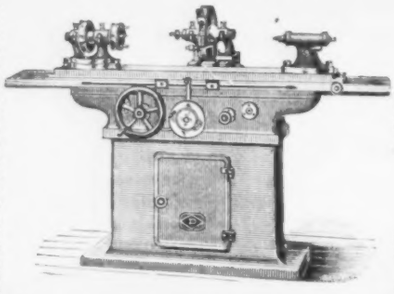

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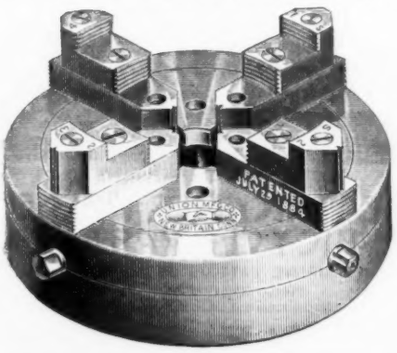

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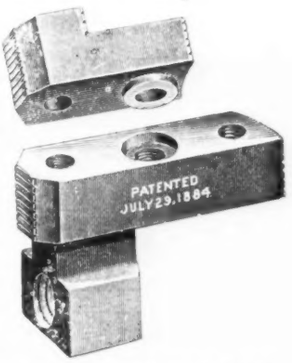

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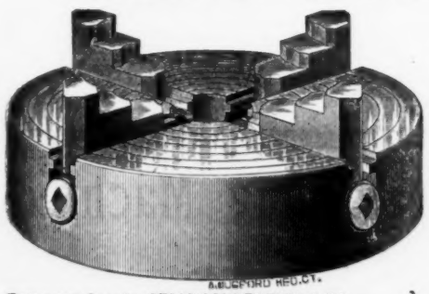

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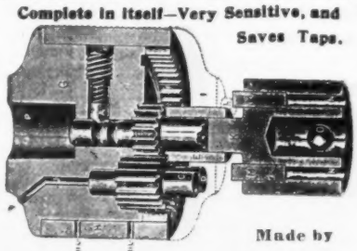

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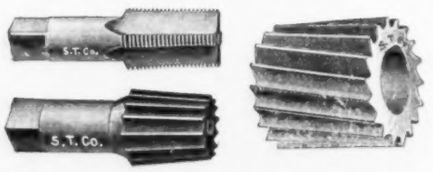

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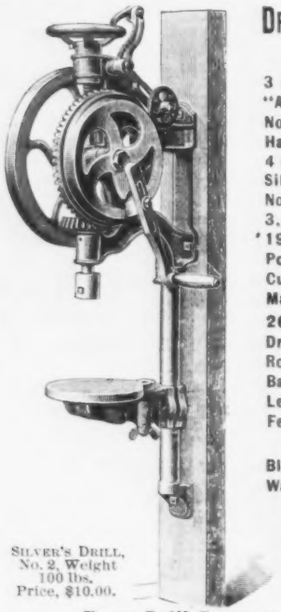

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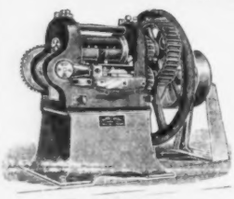

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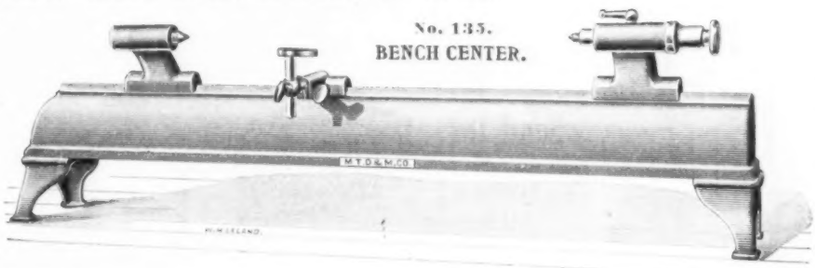

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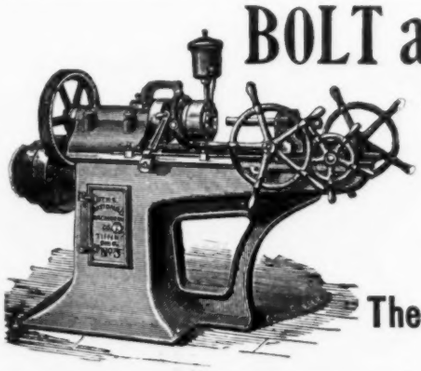

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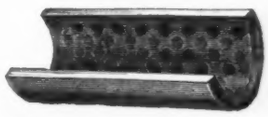

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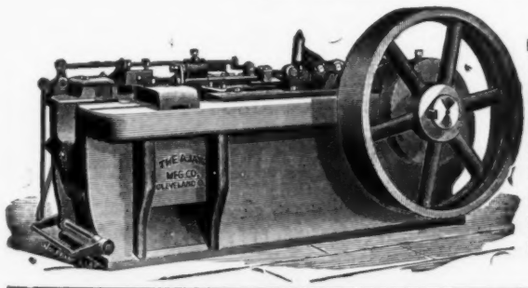

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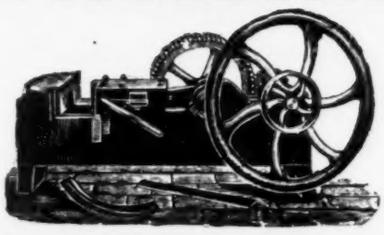

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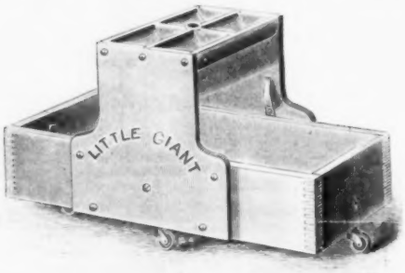
Send for  Catalog.

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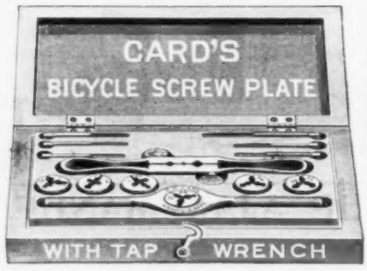

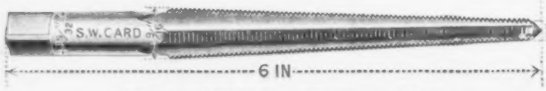

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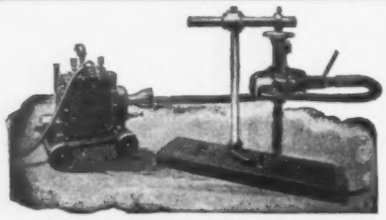

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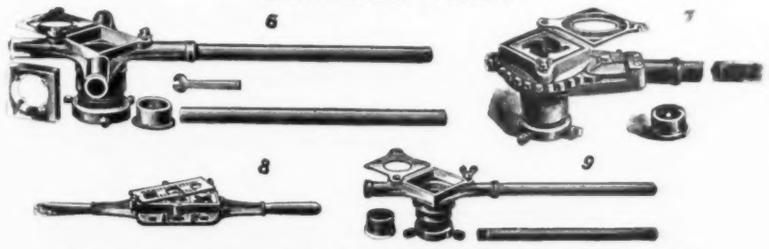

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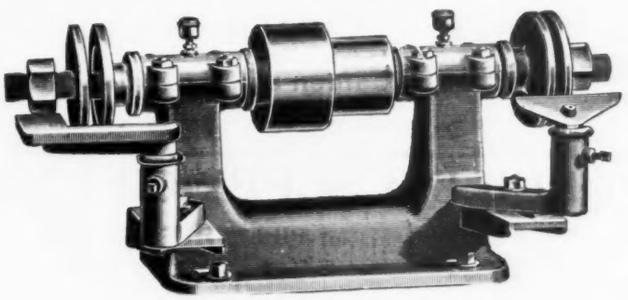

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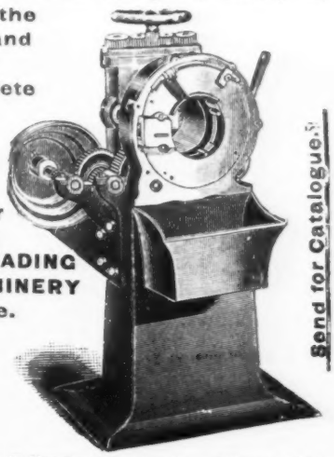

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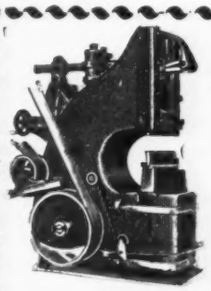

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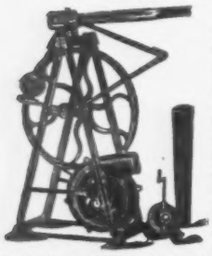

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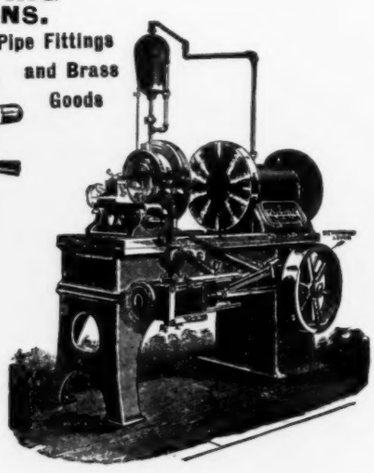

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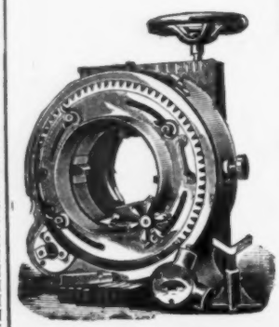

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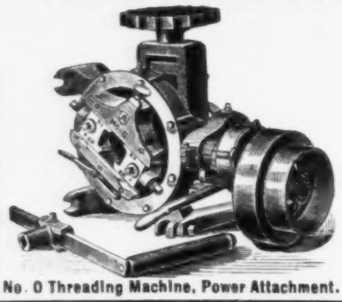

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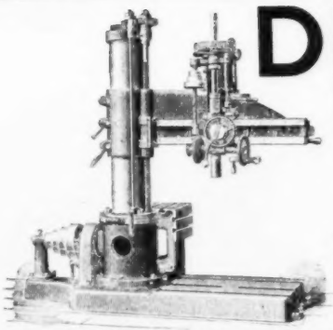

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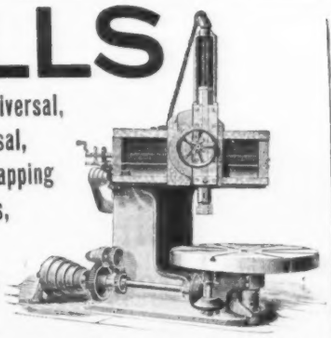

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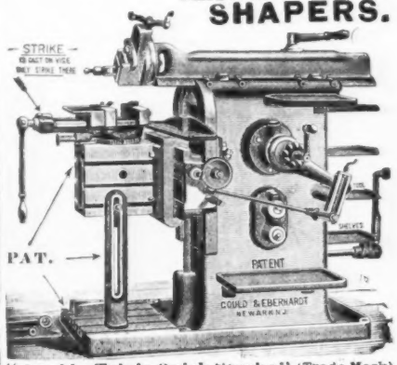

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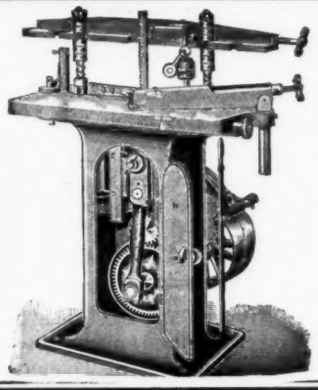

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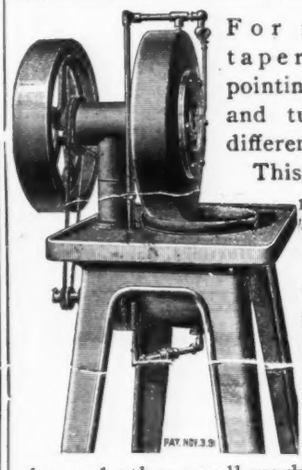

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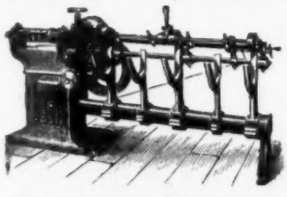

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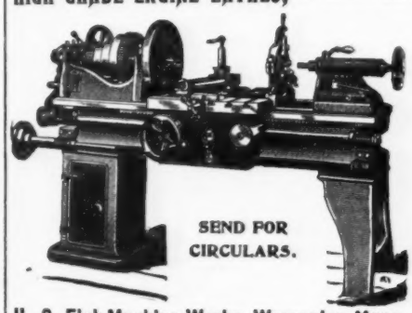

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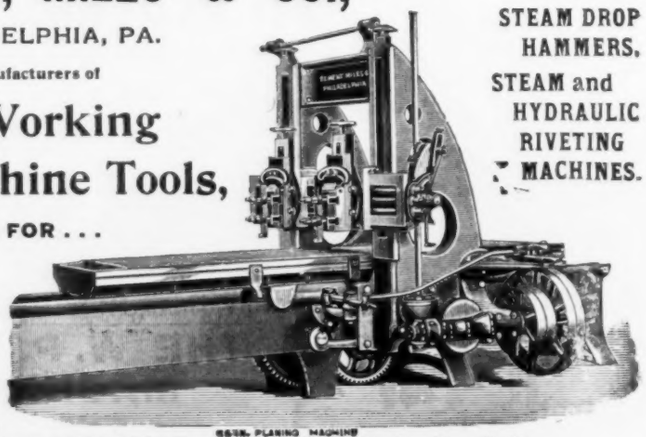

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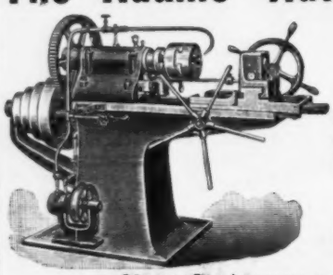

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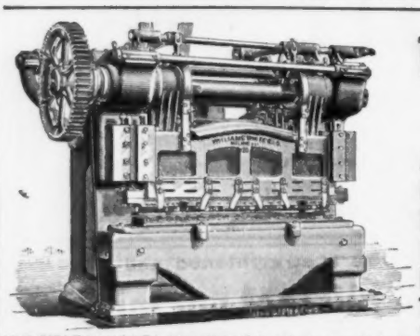

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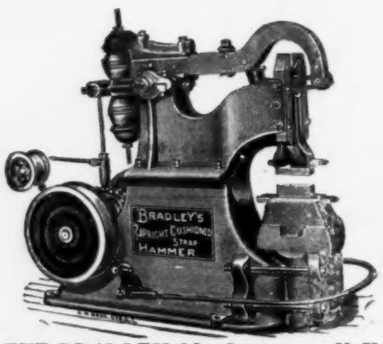

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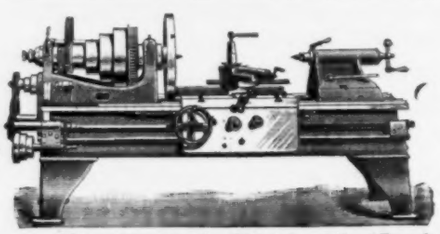

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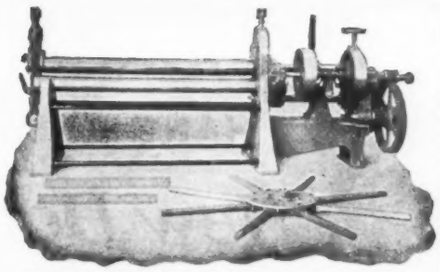

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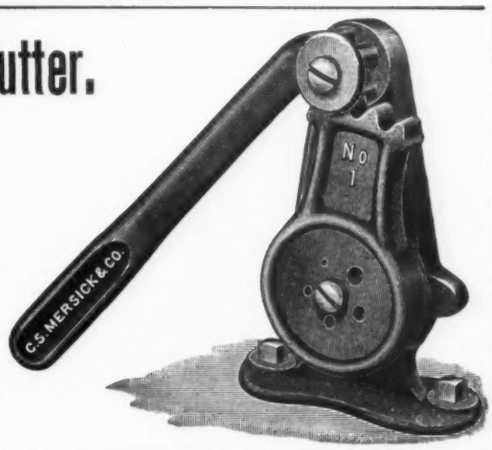

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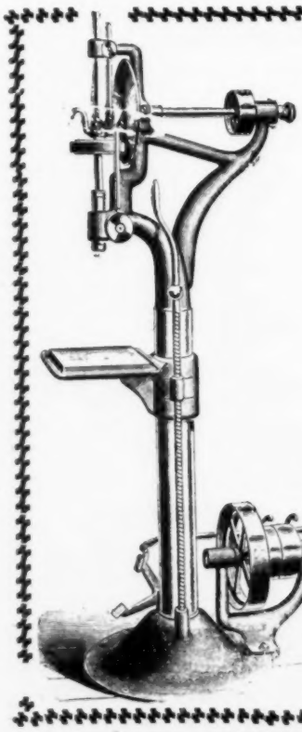

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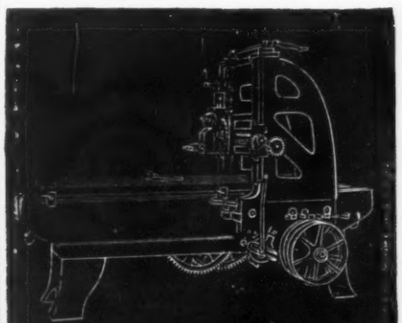

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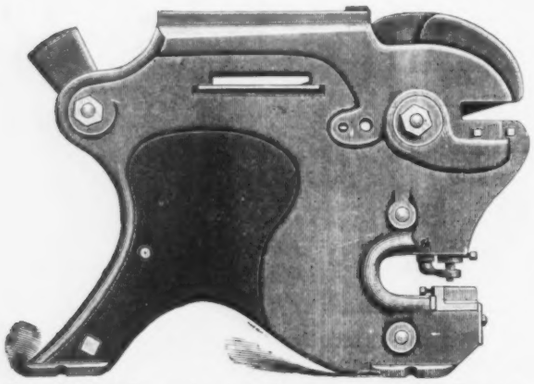

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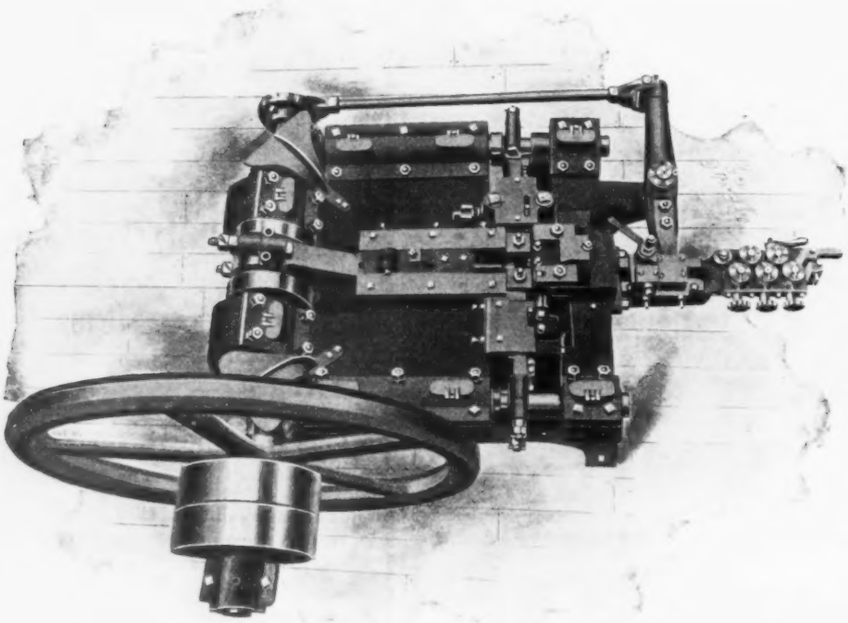

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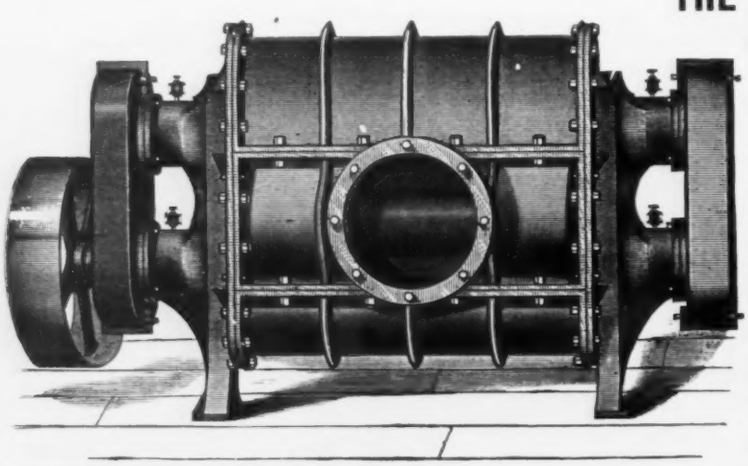

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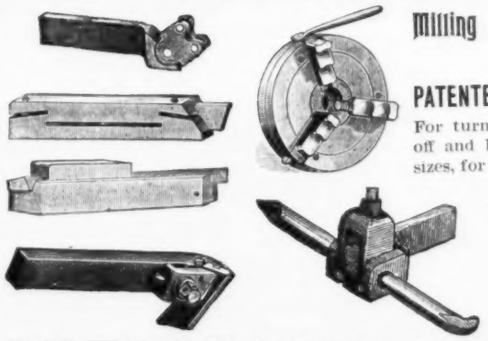

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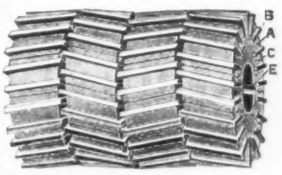

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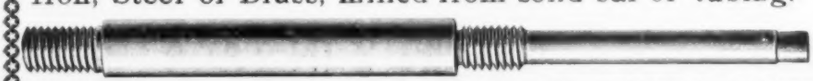

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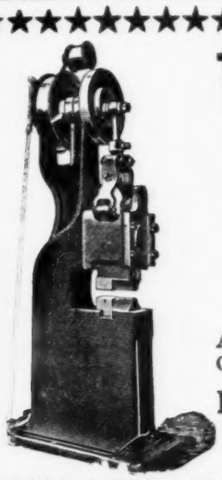

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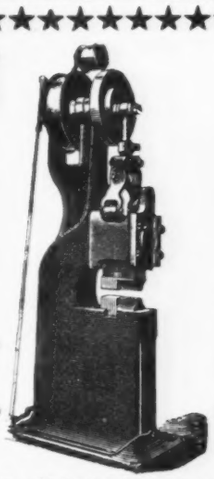

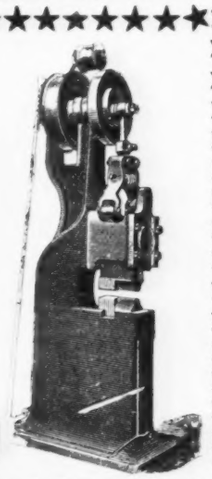

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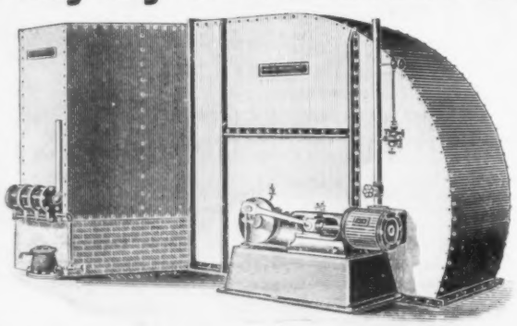

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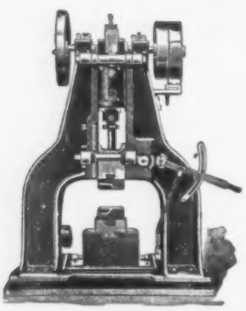

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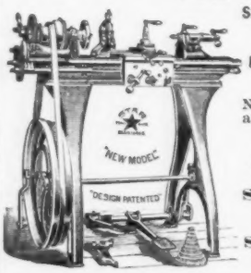

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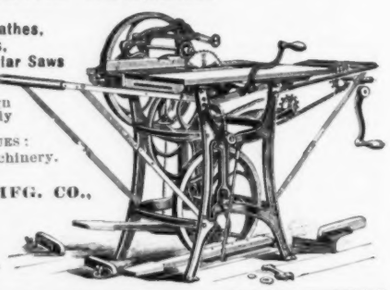

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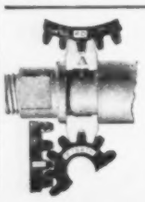

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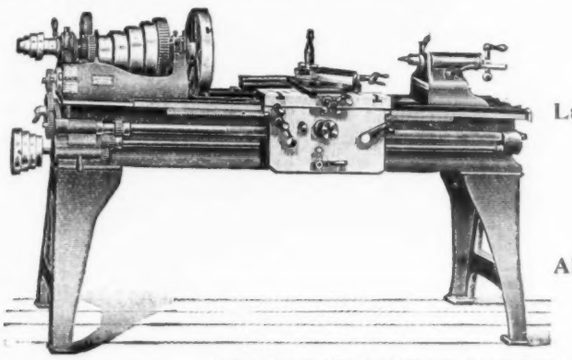

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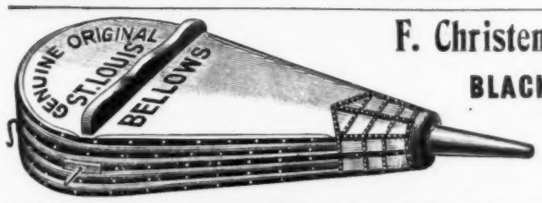

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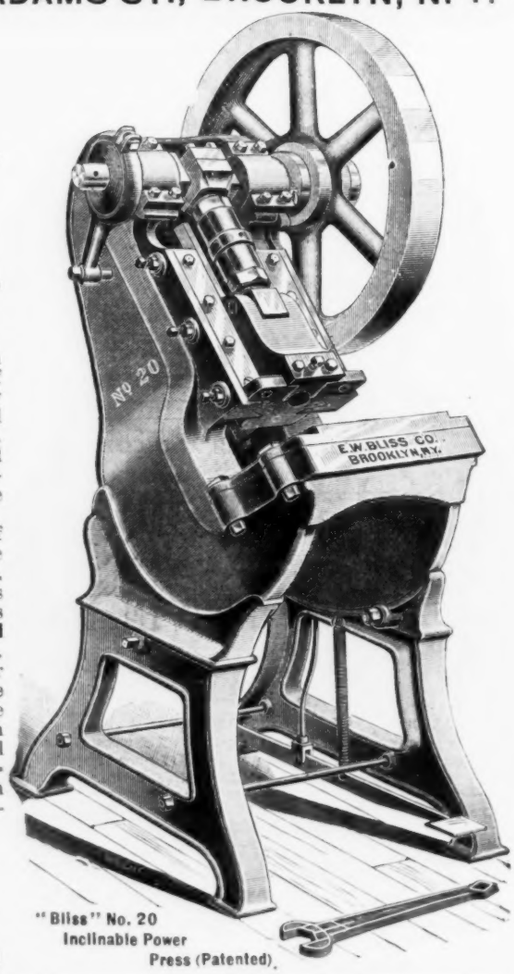

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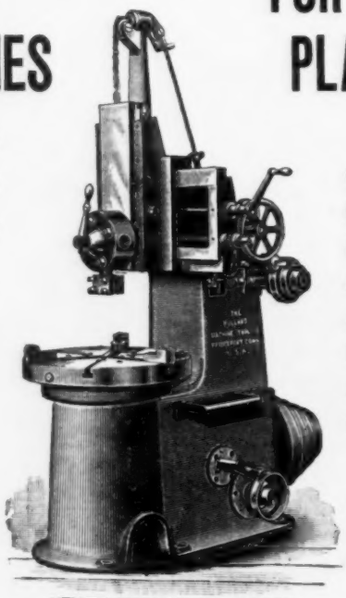

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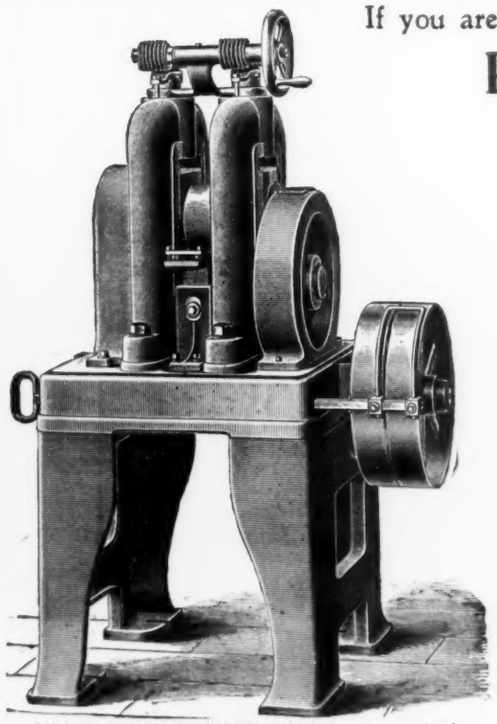

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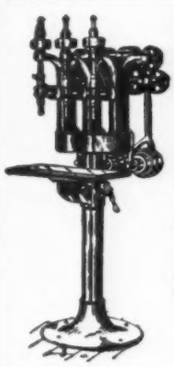

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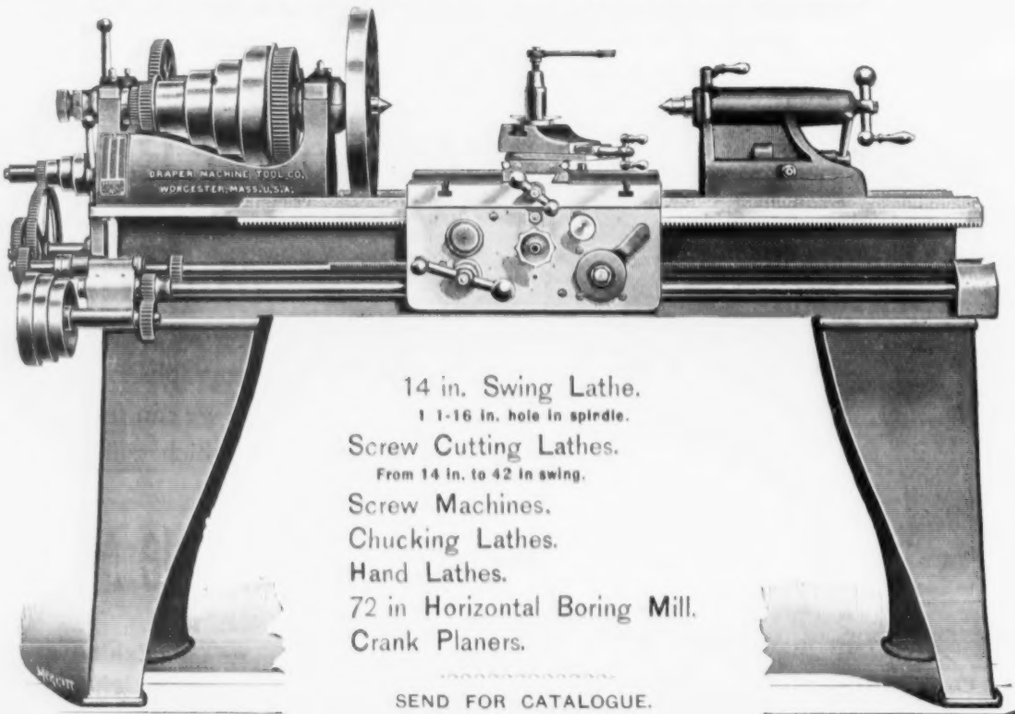

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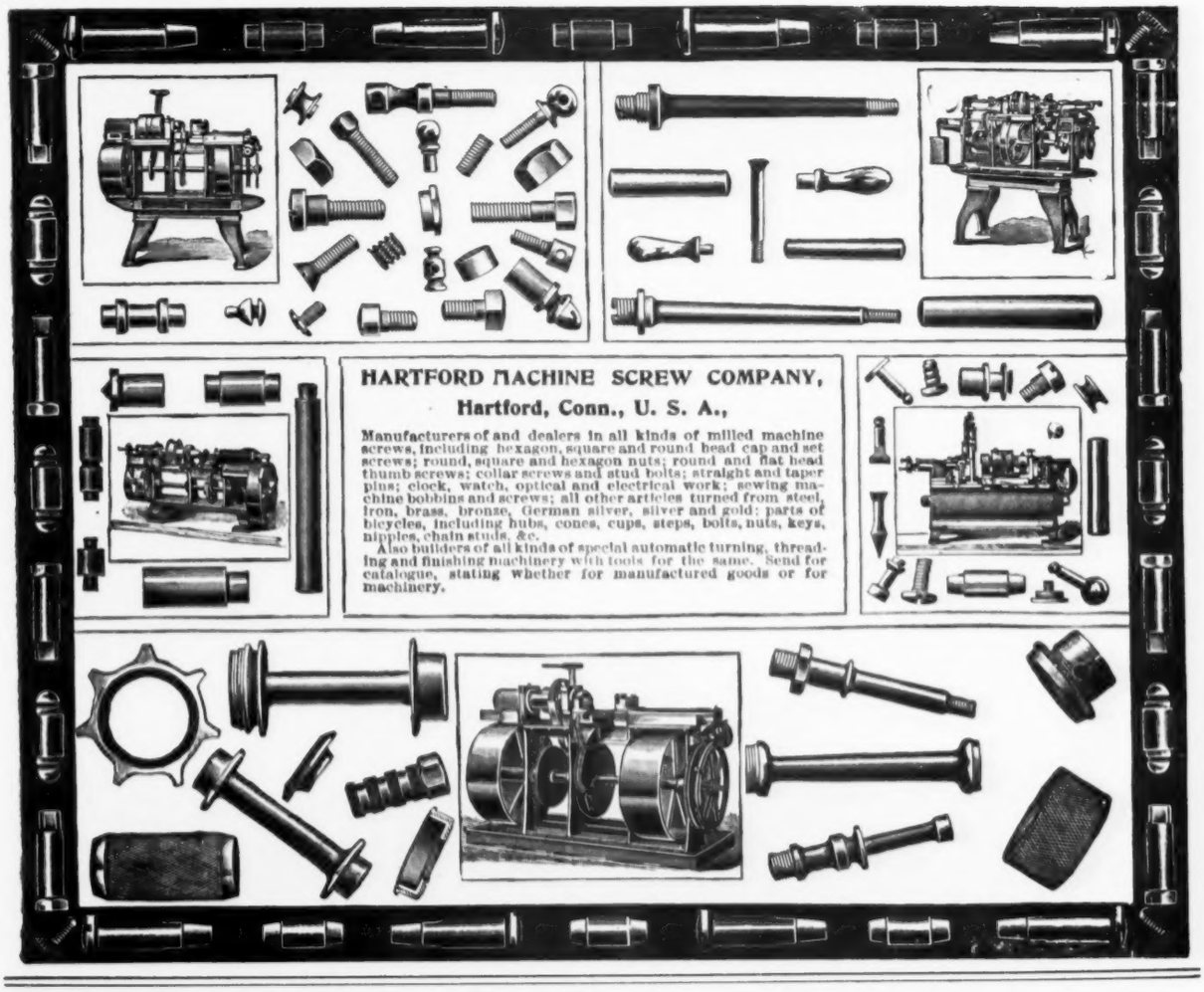

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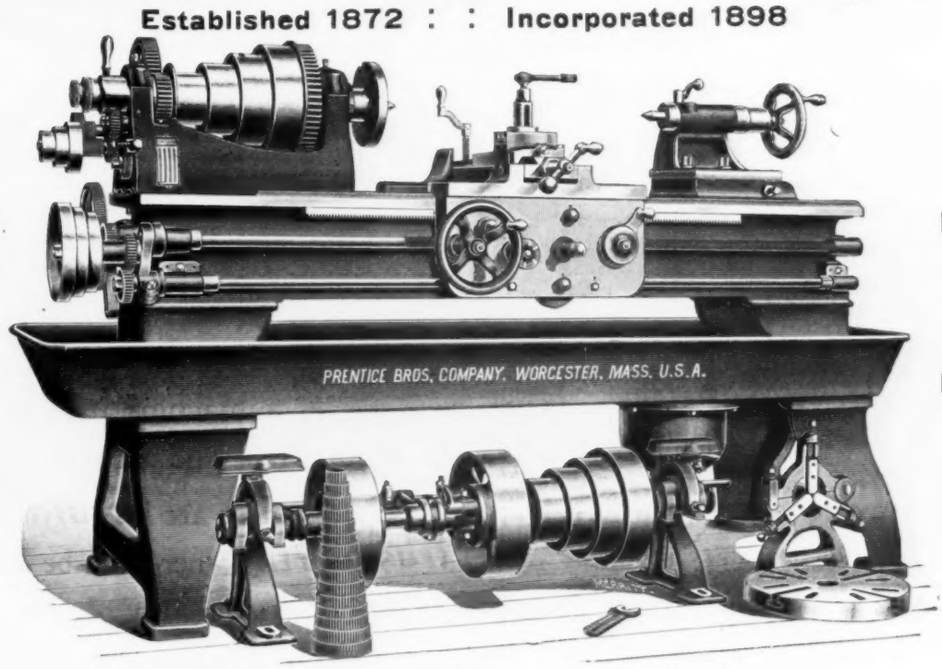

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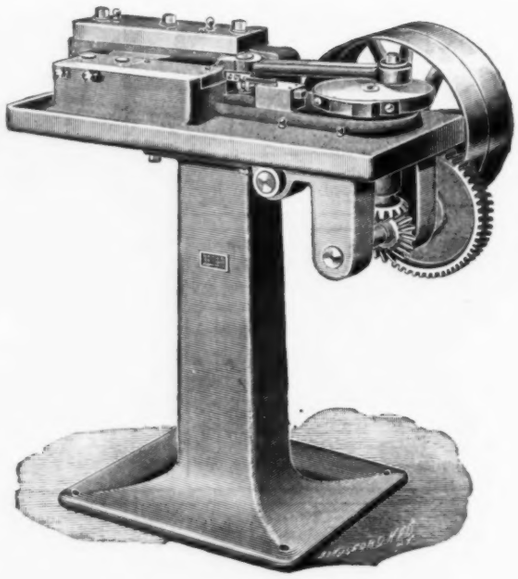

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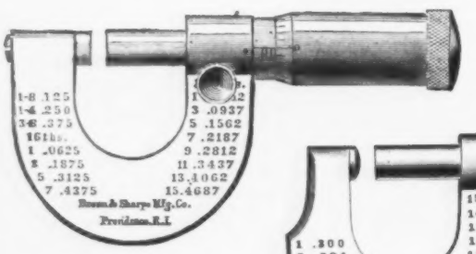

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Machinery appraised any part of country.

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No. 5 Mossberg & Granville Single Acting, Style B, Geared Press. Weight 4500 lbs.

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I have 100 Horse Power Locomotive Boiler, good for 125 lbs. pressure, nearly new, extra large fire box; Round and Square Iron Tanks, all sizes; Boiler Shells for stacks and culverts; Pumps, Upright and Horizontal Boilers, Engines, Blow-off Tanks. All kinds of Scrap Iron and Metals bought.

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IN
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Almost New.

To be sold at second-hand prices.

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1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
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Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
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Boiler 52 in. x 15 ft. 8 in., 284 in. tubes.
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1 Lewis-Oliver Bolt Header, 1 in.
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2 Vertical Boilers, 400 H. P. each, steam 125 lbs.
1 " " 250 " " " 100 "
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Engine Lathes.
13 in. x 6 ft. Ames.
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16 in. x 16 in. x 4 ft.
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24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
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72 in. x 72 in. x 40 ft., 3 heads.

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32 in. G. & E., geared.
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Combined Drill and Slotter.
4 spindle Ames.
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IN EXCELLENT CONDITION.

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50 in. Niles Pulley Lathe.
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Also full line latest improved new machine tools.

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Also complete tool room, including drills, taps, dies, reamers, dogs, clamps, surface, plates, die stocks, 2000 lb. of tool and machinery steel.

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One Bement single axle lathe.

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32 x 32 x 6 L. W. Pond.
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29 x 29 x 9 screw.

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Set of heavy plate bending rolls.

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Also numerous other smaller tools, shafting pulleys, hangers and belting, all in fine condition.

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Pair 36 x 40 in. Horizontal Reversing Engines.

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10,000 feet Brazed Interlocked Tubing, assorted ¾ in., ⅞ in., 1¼ in., 1¼ in.
250 pair Seamless Fork Sides.
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1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in. tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine.
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces. Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place,
Philadelphia, Pa.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower, No. 5. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

STEAM PUMPS FOR SALE.

One 14 and 20 inch x 3½ in. x 15 in. stroke, Worthington Duplex, Compound High Pressure. In good condition and for sale on account necessity for one of more capacity.

One 10 x 7 inch x 10 inch stroke, Duplex Gardner. Also in good condition. Address

BETTENDORF AXLE CO.,
Davenport, Iowa.

NAIL MACHINES
For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

Metals Wanted.

We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

MARKLE LEAD WORKS,
St. Louis, Mo.

For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

HERO STAMPING WORKS,
Room 407, Cuyahoga Bldg., Cleveland, O.

FOR SALE OR TO LET.

Drop Forge Works, building 40 x 130 ft., all fitted up with modern tools. 3 Drops. 3 Power Presses. Machine Shop. Japanning Plant Shears. Brick Boiler House. 2 Steel 40 horse-power Boilers. 1 50 horse-power Engine. Complete Oil-Fuel Plant. Side track in yard, no shifting charges. For information address

F. A. FISHER, Gloucester, Mass.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
office of *The Iron Age*, 59 Dearborn St., Chicago.

We Have For Sale

2 150 h. p. Babcock Wilcox Boilers, with first joint connections.
1 18 h. p. Gasoline Engine.

ALL IN FIRST CLASS CONDITION.

FRANK SAMUEL,
Harrison Building, 15th and Market Sts.,
Phi adelphia.

ENGINE.

Vertical, 16 in. x 18 in. cylinder, in first-class order, complete. Price, $475 00.

BOILER.

Shell, 56 in. dia., 34 Tubes, 5 in. x 15½ ft. Price, $150.00.

Further information desired on application to

JAMES LEFFEL & CO.,
Springfield, Ohio.

FOR SALE.
Two 28 by 60 Corliss Engines

One Right Hand, One Left Hand.
2nd Hand—good order.

Address, J. A. VAIL,
Security Bldg., St. Louis, Mo.

PITTSBURGH
SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

No. 8 Wood St.,
Pittsburgh, Pa.

We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

Locations for Industries.

The Chicago, Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C. M. & St. P. R'y
Old Colony Building, Chicago, Ill.

WANTED.

Capitalists to engage in the erection of a Wire Rod Mill. We have one of the finest locations in the heart of the coal regions in the Pittsburgh district, on the Monongahela River, with water and railroad connections. We now have a number of Wire Nail Machines in operation and would take stock for all of our present plant in a new organization.

Address P. O. Box 254, Pittsburgh, Pa.

FOR SALE
AT A BARGAIN.

The Machinery of the RIPPEL FOUNDRY, as follows:

Two cupolas, one fifteen ton traveling crane, two swinging or hand cranes, two core ovens and cars, one Root blower and about eighty feet of pipe, two lathes, one planer, one bolt cutter, one drill press, two emery wheels and frames, one electric dynamo and fixtures, one polisher, one each five, ten and twenty ton ladels and shanks, a number of large flasks, including all the tools, patterns and moulds. This machinery, tools, etc., are a l in good condition, having been used less than two years. This outfit is for sale cheap, as the buildings will be used for other purposes.

JOHNSON & CO.
Mt. Gilead, Ohio.

FOR SALE—FOR CASH.

Best Hardware business in Michigan. Stock will inventory about $9,000,00. Done a business of $42,000 00 in 1898, can be increased to $50,000 00 in '99. Must be sold at once for cash.

For information, address,

"CASH,"
office of *The Iron Age*, 232-238 William St., N. Y.

FOR SALE.

The best Hardware opening in Eastern Illinois. Stock about $4000. Address

"FACTS,"
office of *The Iron Age*, 232-238 William St., N. Y.

For Sale.

Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
Florence, Mass.

60-TON PORTABLE,
HYDRAULIC PRESS,

for Pressing on Cranks, Crank Pins, Sheaves, Car Wheels, etc. Labor saving. Only $150.00.
VULCAN IRON WORKS,
55 Milwaukee Ave., Chicago.

FOR SALE.

Established jobbing and retail hardware business in good business town of Northern Ohio. Best of reasons for selling. A fine opportunity for some one. Address

"O. I. O."

office of *The Iron Age*, 232-238 William St., N. Y.

PERMANENT EXHIBITION

OF MANUFACTURES FOR

EXPORT,

. . . IN . . .

NEW YORK. BOWLING GREEN BLDG.

We are in connection with foreign buyers. For further information and details, write to the

INTERNATIONAL LAND AND EXHIBITION COMPANY,
New York City.

WANTED.

Two second-hand Nut Machines. Must be first-class make and at a bargain. Write for full particulars to

"NUT MACHINERY"

office of *The Iron Age*, 232-238 William Street, N. Y.

EUGENE V. N. BISSELL, Auctioneer.

E. BISSELL & CO.,

Successors to
HAYDOCK & BISSELL
WHOLESALE
HARDWARE AUCTIONEERS,
12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

PHILADELPHIA SALES AGENCY.

FITCHBURG MACHINE WORKS.
P. BLAISDELL & CO.
BRADFORD MILL CO.
BICKFORD DRILL & TOOL CO.
CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second Hand Machinery.
JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia

SCRATCH CLOTH

for cleaning files and other tools.

WIRE CABLE

in job lots, at very low prices.

WALSH'S SONS & CO.
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.
Telephone Call, 897 18th St.

Morton B. Smith.

243 FRONT ST., NEW YORK.

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 54 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300	tons	56's.
70	"	60's.
75	"	50's.
50	"	72's.

WM. H. PERRY CO.,
Providence, R. I.

MICHIGAN COLLEGE OF MINES.

Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address

DR. M. E. WADSWORTH, President,
Houghton, Michigan.

FOR SALE.

We offer for sale the following plants, with all real estate, buildings, machinery, fixtures and tools complete, or we will dismantle same to suit buyers:

Danville Rolling Mills and Nail Works, Danville, Pa.
Cofrode & Saylor Bridge Works, Pottstown, Pa.
Rolling Mills A and B, Catasaqua, Pa.
Rolling Mill C, Fullerton, Pa.
Irondale Furnace, Independence, W. Va.

These plants contain over 7,000 tons of machinery and equipment of every description.

C. R. BAIRD & CO.,
Pig Iron,
Philadelphia, Pa.

To the Preferred and Common Stockholders of the

AMERICAN STEEL AND WIRE COMPANY.

During several months past the holders of a large portion of the shares of the American Steel and Wire Company have been carefully considering the advisability of obtaining by purchase or reorganization other leading wire concerns in the United States, among them the Cleveland Rolling Mill Company of Cleveland, Ohio, manufacturers of pig iron, Bessemer steel, and open-hearth steel, as well as wire in its various forms, and the Washburn & Moen Manufacturing Company of Worcester, Mass., and Waukegan, Ill.

It is believed that there would result greater economy in management and operation, and thereby be of advantage to all the stockholders of the several companies. After a thorough investigation of the several properties and their values, actual as well as relative, the acquisition of the following plants has been assured upon a just and fair basis:

Washburn & Moen Manufacturing Company of Worcester, Mass., and Waukegan, Ill.

Worcester Wire Company, of Worcester, Mass.

Cleveland Rolling Mill Company of Cleveland, Ohio.

Oliver & Snyder Steel Co. of Pittsburgh, Pa.

Oliver Wire Company of Pittsburgh, Pa.

Newcastle Wire Nail Company of Newcastle, Pa.

Pittsburgh Wire Company of Pittsburgh, Pa.

Cincinnati Barbed-Wire Fence Company of Cincinnati, Ohio.

Laidlaw Bale and Tie Company of Joliet, Ill., and Kansas City, Mo.

Consolidated Barb-Wire Company of Lawrence, Kan., and Joliet, Ill.

Newburgh Wire and Nail Company of Newburgh, N. Y.

To accomplish the object suggested, the following plan has been agreed upon:

AGREEMENTS HAVE BEEN ENTERED INTO FOR THE ORGANIZATION OF A CORPORATION UNDER THE LAWS OF THE STATE OF NEW JERSEY, TO BE KNOWN AS THE AMERICAN STEEL AND WIRE COMPANY. THIS CORPORATION WILL HAVE AN AUTHORIZED CAPITAL STOCK OF $90,000,000, OF WHICH $40,000,000 WILL BE SEVEN PER CENT. CUMULATIVE PREFERRED STOCK AND $50,000,000 WILL BE COMMON STOCK.

This corporation will acquire the above properties either by direct ownership or through the ownership of not less than a majority of the capital stock, where it is not practicable to purchase the properties themselves.

A SYNDICATE HAS BEEN FORMED WHICH WILL FURNISH THE NECESSARY CAPITAL FOR THE ABOVE PURCHASE, AND IN ADDITION THERETO PROVIDING THE NEW COMPANY WITH A WORKING CAPITAL OF ABOUT $13,000,000, EXCLUSIVE OF THE WORKING CAPITAL OF THE SEVERAL CONCERNS WHICH WILL ENTER THE NEW CORPORATION. WHATEVER MAY BE NECESSARY OF THIS WORKING CAPITAL MAY BE USED FOR THE PURCHASE OF OTHER PROPERTIES WHICH MAY BE AGREED UPON HEREAFTER, THE ENTIRE AMOUNT OF CAPITAL TO BE FURNISHED BY THE SYNDICATE BEING $28,000,000.

The syndicate agreements will provide that the New Jersey company shall acquire such of the capital stock of the American Steel and Wire Company of Illinois, not less than a majority thereof, however, as may be offered, on the following basis:

For each share of the preferred stock of the Illinois corporation the holder thereof shall receive one share of the seven per cent. cumulative preferred stock of the New Jersey corporation, and in addition thereto six-tenths of one share of the common stock of the New Jersey corporation; for each share of the common stock of the Illinois corporation the holder thereof shall receive one and two-tenths shares of the common stock of the New Jersey corporation. It is further arranged that the banking-house of J. & W. SELIGMAN & CO. OF NEW YORK CITY, or its agent for that purpose (THE ILLINOIS TRUST AND SAVINGS BANK OF CHICAGO, ILL.), will exchange the certificates of the American Steel and Wire Company of Illinois, on the above-named basis, provided the same are presented and deposited at either of the offices above named on or before TUESDAY, JANUARY 17, 1899; that in event of delay in issuing the certificates of the New Jersey corporation interim certificates will be issued exchangeable for the engraved certificates when issued. The interim certificates will be issued by either J. & W. Seligman & Co. or their agents (the Illinois Trust and Savings Bank at Chicago).

It is very desirable that the fiscal year of the New Jersey corporation commence on January 1, 1899, and to that end the plan must be consummated at the earliest possible date; therefore, the stockholders in the American Steel and Wire Company of Illinois are requested to present and deposit their stock promptly, so that the same may be speedily and without delay exchanged, and the organization of the New Jersey company facilitated.

Books of transfer of the American Steel and Wire Company of Illinois were closed on Wednesday, January 4th, 1899, and will not be reopened until about January 25th, 1899, and the books of the New Jersey corporation will be opened as soon as the engraved certificates are ready for delivery, not later, however, it is believed, than January 25th, 1899.

IT IS PROPOSED THAT THE NEW COMPANY WILL DECLARE REGULAR QUARTERLY DIVIDENDS ON THE PREFERRED STOCK OF ONE AND THREE-QUARTERS PER CENT., BEGINNING ABOUT APRIL 1ST, 1899.

The undersigned, comprising the entire Board of Directors of the American Steel and Wire Company of Illinois, after a careful consideration, believing that the consummation of the plan proposed will increase earnings, decrease expenses, result in a more stable cost of manufacture, and more satisfactory results to the stockholders, have decided to exchange their own shares in the Illinois corporation for shares in the New Jersey corporation, upon the above-named basis:

J. W. GATES,
A. CLIFFORD,
I. L. ELLWOOD,
CHAS. DOUGLASS,
WM. EDENBORN,
S. H. CHISHOLM,
JOHN LAMBERT,
F. BAACKES,
E. H. GARY,
E. J. BUFFINGTON,
W. H. ROWE.

January 7, 1899.

NEW YORK, JANUARY 7, 1899.

TO THE HOLDERS OF THE **PREFERRED** AND **COMMON** STOCK OF **AMERICAN STEEL AND WIRE COMPANY:**

WE ARE NOW PREPARED TO RECEIVE THE DEPOSIT OF CERTIFICATES OF SAID STOCK, UNDER AN AGREEMENT DATED JANUARY 5, 1899, BETWEEN JOHN W. GATES AND ISAAC L. ELLWOOD AND FREDERICK P. VOORHEES, ISSUING THEREFOR OUR NEGOTIABLE CERTIFICATES OF DEPOSIT, EXCHANGEABLE FOR THE STOCK OF THE AMERICAN STEEL AND WIRE COMPANY (NEW COMPANY) WHEN RECEIVED BY US FOR DELIVERY. ALL STOCK CERTIFICATES TO BE DEPOSITED MUST BE DULY ENDORSED IN BLANK.

NEW YORK CERTIFICATES TO BE PRESENTED AT THE OFFICE OF **J. & W. SELIGMAN & CO.**, 21 BROAD STREET, NEW YORK.

CHICAGO CERTIFICATES TO BE PRESENTED AT THE OFFICE OF THE **ILLINOIS TRUST & SAVINGS BANK, CHICAGO**, WHO WILL ISSUE CERTIFICATES OF DEPOSIT THEREFOR ON OUR BEHALF.

J. & W. Seligman & Co.,
DEPOSITARY.

EXPORTERS.

Having valuable experience in handling Export business as a freight broker, and being in daily intercourse with the various steamship lines leaving New York, would be pleased to correspond with parties desiring their Export Shipments efficiently looked after.

N. L. WILLS,
A17-18, Produce Exchange, New York.

FOR SALE.

The Eagle Iron Works, a fully equipped foundry and machine shop; full particulars on application. HENRY B. LOVELAND, Trustee in Bankruptcy, 820 Ellicott Square, Buffalo, N. Y.

FOR SALE.

A General Hardware Business, established in 1874, has always done a profitable and safe business, located in the largest town in the county and in one of the best farming districts in Michigan. Will sell or rent store; wish to retire from active business. Stock will inventory about $4,500.00. Address
L. B. YOUNG,
care Michigan Stove Co.,
Detroit, Mich.

WANTED.

Blast Furnace Plant.

We desire to purchase for spot cash a large modern blast furnace, with all appurtenances complete. C. R. BAIRD & CO., Pig Iron,
PHILADELPHIA, PA.

WANTED.

Quick-acting press, new or second-hand. Capacity to punch ¾ in. hole through ⅜ in. iron.
BOSTON & LOCKPORT BLOCK CO,
Boston, Mass.

WANTED.

A man with good executive ability with about $10,000 to take an interest in an old established machinery business which has a large export trade One preferred who understands mechanical drawings; to such, this is a grand opening. Our references are among the best machinery houses of this country and England. Answer with reference to
"C. M. S., 112,"
office of *The Iron Age*, 232-238 William St., N.Y.

HELP WANTED.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

SALESMEN frequently visiting the agricultural implement and hardware trades in the New England, Eastern and Southern States to sell as a side line our patent plow spring on commission; an article that easily sells; write for particulars. Keystone Plow Spring Company, Renshaw Building, Pittsburgh, Pa.

METAL SALESMEN wanted by responsible concern dealing in stereotype, linotype, electrotype and babbitt metals, also copper compound; experienced man for New York City and also representatives for other territory; liberal terms offered. Address "Metal Salesman," office of *The Iron Age*, 232-238 William street, New York City.

ROLLER.—A competent, sober and up to date skelp and bar mill roller for 10-inch train; Eastern Pennsylvania; steady employment; state age and experience. Address "W. H. L.," office of *The Iron Age*, 232-238 William street, New York City.

A competent DRAFTSMAN or MECHANICAL ENGINEER with capital to take an interest in a live concern with a good line of standard tools who desires to add another large line. Address "J. M. R.," office of *The Iron Age*, 22-24 Pickering Building, Cincinnati, Ohio.

HELP WANTED.

WANTED.

Draftsman — Rolling Mill.

Draftsmen, familiar with light rolling mill work, wanted in an Eastern city. Write full statement, giving age, experience, by whom now employed, present and desired salary, also reason for wishing to make a change.

Address "W. M.,"

office of *The Iron Age*, 232-238 William St., N. Y.

WANTED.

A thoroughly competent man to manage a foundry casting both gray and white iron. Must not only understand heavy and light casting but must be an energetic manager. A splendid position for the right man. Must furnish full particulars as to experience, and must have unexceptional references. Immediate engagement.

"MANAGER,"
Lock Box 1086,
PHILADELPHIA, PA.

DRAFTSMAN of experience in general designing of machinery and estimating expense of construction to assume considerable responsibilities. Address "Designs," office of *The Iron Age*, 232-238 William street, New York City.

SITUATIONS WANTED

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

Steel works SUPERINTENDENT wants situation; experienced in open hearth and crucible steel making; sheets and plates, special shapes, finely finished machinery and agricultural implement steels, cold rolled and tool steel and steel forgings; modern mills and methods; highest references as to character and ability. Address "Steel Works," office of *The Iron Age*, 232-238 William street, New York City.

By a careful, reliable, energetic man of 24 position as private secretary, stenographer or to take charge of commercial correspondence, with opportunity for promotion; nine years' experience in large machine works office; unquestioned reference from present employers; correspondence solicited. Address "X. X. X.," office of *The Iron Age*, 232-238 William street, New York City.

FOREMANSHIP of foundry wanted, making heavy or medium castings in loam, dry and green sand; good results handling cupola and men. Address "H. M. C.," office of *The Iron Age*, 232-238 William street, New York City.

A thoroughly practical factory MANAGER, familiar with every position along the line of practice in machine shops, foundries and kindred departments, would be pleased to correspond with parties requiring the services of an energetic manager; salary or share. Address "Executive," office of *The Iron Age*, 232-238 William street, New York City.

MECHANICAL ENGINEER, SUPERINTENDENT OR SALESMAN.—An American, of good address, 40 years of age, with excellent record, good executive ability, a fine organizer and manager in both office and shop, wants connection with first-class house; no objection to traveling in this country or abroad. Address Box 520, office of *The Iron Age*, 805 Fisher Building, Chicago, Ill.

As SUPERINTENDENT and FOREMAN of architectural and structural iron works; I am at present employed, but desire to change position; have held similar position for the last ten years and capable of handling men; I am 35 years of age and have 21 years' practical experience; can give best of reference as to character and ability; speak German and English. Address "A. F.," office of *The Iron Age*, 232-238 William street, New York City.

By a young man, 22 years of age, having good knowledge of the hardware business, a position in a hardware jobbing house, either at office work, salesman or any other position he might prove to be qualified to fill and which offers opportunity for advancement; best of references. Address "H. E.," office of *The Iron Age*, 232-238 William street, New York City.

By a gentleman of 20 years' experience in hardware, paint and glass business, retail and wholesale; has filled all positions incident to the business in office salesroom and traveling; manager and buyer ten years; complete knowledge of door sash and blind business; willing to work hard in any department; best of references. Address "F., 40," office of *The Iron Age*, 232-238 William street, New York City.

A position as FOUNDRY CLERK; have had three years' experience; can keep correct account of time of day and piece workers, of patterns and castings, and all accounts in any way connected with the working of a first-class foundry; age 22 years; desire for change being because I wish to better myself and get with some good firm where merit will make an opening for advancement. Address "Time Keeper," office of *The Iron Age*, 232-238 William street, New York City.

Would like to correspond with some company that is in need of an industrious FOUNDRY FOREMAN; am a practical molder; have had ten years' experience as a foundry foreman, making light and heavy work; understand economical melting and mixing of iron; references given as to character and ability. Address "Industry," office of *The Iron Age*, 232-238 William street, New York City.

SALESMAN or CORRESPONDENT, 31 years of age, thoroughly conversant with the iron and steel business, particularly plates and shapes, both from manufacturing and commercial standpoints, desires permanent position; has had seven years' experience in mill practice and eight as salesman; can take entire charge of correspondence if desired; sober, reliable and industrious; best references. Address "S. or C., 91," office of *The Iron Age*, 232-238 William street, New York City.

In the jobbing hardware business; have had over 20 years' experience and am thoroughly familiar with it in all of its branches; have had long experience both as city and stock buyer, and would be competent to fill such a position, either as assistant or principal; have a good acquaintance and trade in Northern and Central New York on the line of New York Central Railroad. Address "Sterling," office of *The Iron Age*, 232-238 William street, New York City.

AGENCY.—German, with 20 years' experience in Europe and United States—at present established in Eastern city—intends to return to Europe as agent for American manufacturers; familiar with English, French, German, Italian and Spanish; has good connections in all European countries; first-class references. Address "W.," office of *The Iron Age*, 70 Kilby street, Boston, Mass.

Technical graduate, who has made a specialty of shop cost keeping, several years' experience as bookkeeper, expert on typewriter, desires position; correct in habits, reliable, energetic, not afraid of hard work; does not know it all, but quick to adapt himself to new methods. Address "Earnest," office of *The Iron Age*, 232-238 William street, New York City.

As OFFICE MANAGER or ASSISTANT by young man age 35; ten years' experience with large manufacturer of hardware; well educated; familiar with shop methods, accounting, costs, advertising, cataloguing and office work; capable correspondent, organizer and salesman; good address and executive ability. Address "Energetic," care of Y. & T., 9 Murray street, New York City.

By young man as TRAVELING SALESMAN for hardware, paint, bicycle or household furnishings house; ten years' experience as buyer and owner of retail business in above lines; would take position requiring only part time; New England preferred; best of references. Address "B. W. C.," office of *The Iron Age*, 232-238 William street, New York City.

A thoroughly competent man in the manufacture of fire brick, hollow brick and porous fire proof building material, ornamental building brick and glazed sewer pipe desires an engagement as FOREMAN or SUPERINTENDENT. Address "Clay Goods," office of *The Iron Age*, 232-238 William street, New York City.

TRAVELING SALESMAN, personally acquainted with entire wholesale and retail hardware and sporting goods trade of United States and Canada; six years on the road, and practical gun and bicycle man; 35, single and a hustler; best of references; commission and Cheap John people don't write. Address "Gun Man," office of *The Iron Age*, 232-238 William street, New York City.

As SALESMAN on the road; have had 14 years' experience selling the wholesale and larger retail hardware trade from Halifax to Omaha. Address "Hardware Salesman," office of *The Iron Age*, Forrest Building, 117-119 South Fourth street, Philadelphia, Pa.

An up to date foundryman as FOREMAN of foundry doing bench or machinery work; the advertiser is 30 years of age and can furnish the best of reference as to ability and habits. Address "Foundry Foreman, 15," office of *The Iron Age*, 232-238 William street, New York City.

A young man, with 18 years' experience in the wholesale and retail iron and steel business, would like to represent as SELLING AGENT some Western mill (Eastern Pennsylvania preferred), makers of merchant bars, especially shafting iron and steel, puddled and refined irons, in New England, with Boston office, on commission. Address "C. F. B.," P. O. Box 1896, Boston, Mass.

As SUPERINTENDENT of rolling mill by practical man with 20 years' experience in scrap and puddled iron system; can give best of reference as to character and ability. Address "D. C. A.," office of *The Iron Age*, 232-238 William street, New York City.

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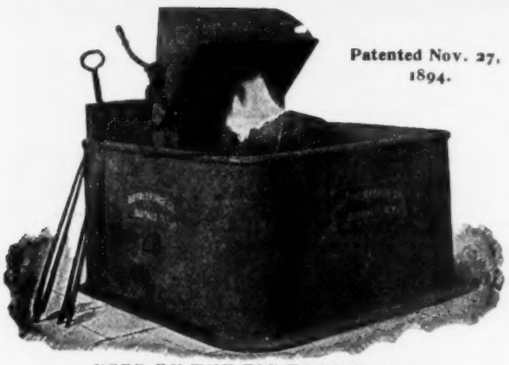

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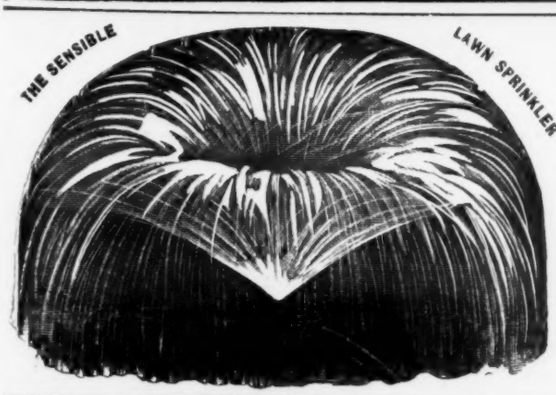

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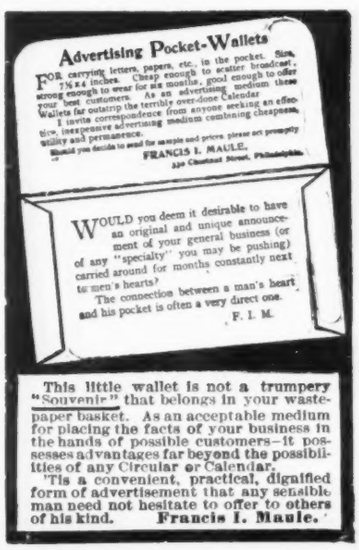

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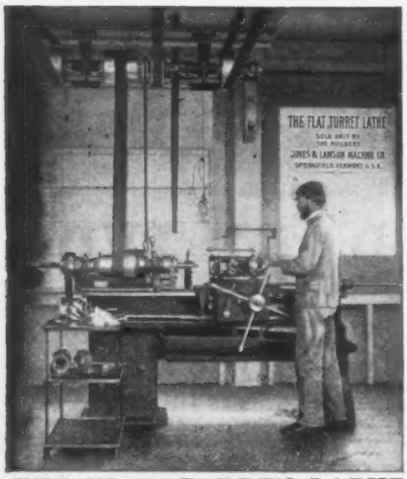

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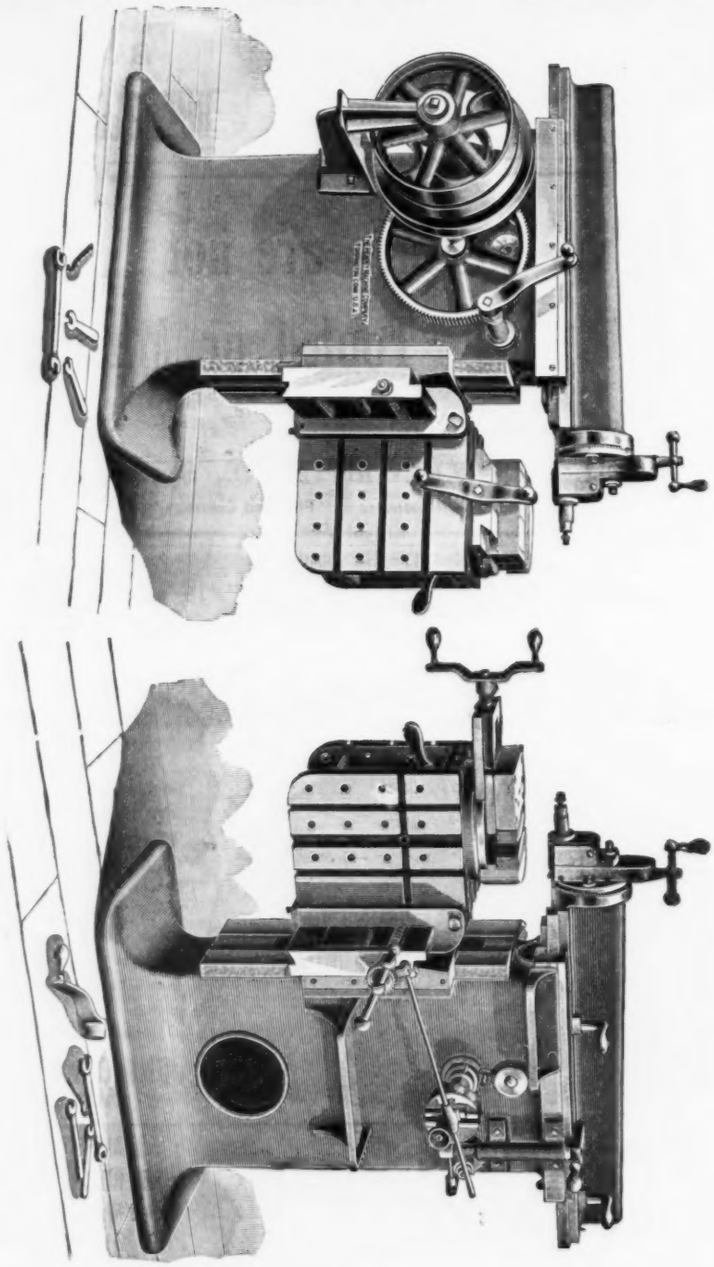

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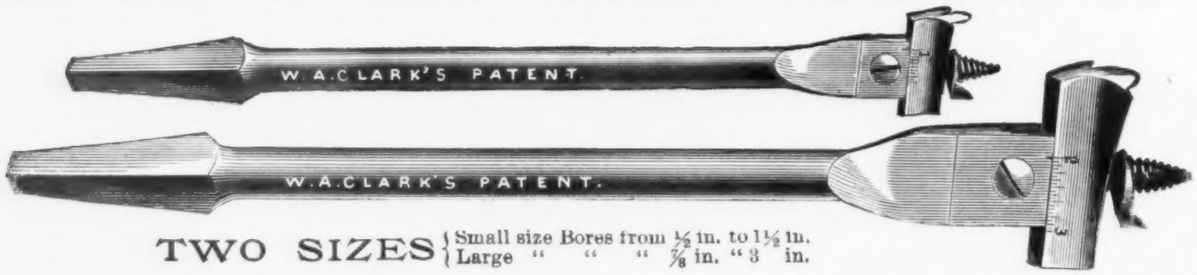

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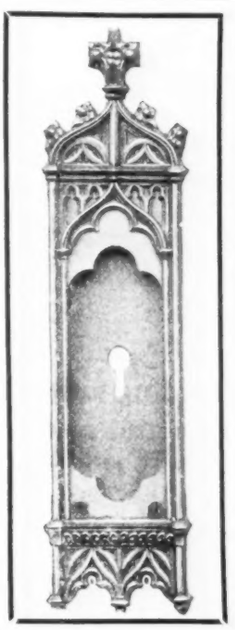

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This is the only Broom which will clean or scrub a floor without the use of water. For use in Machine Shops, Factories, Warehouses, Stores and all business places.

The ideal Broom for hard wood floors.

It cleans without defacing.

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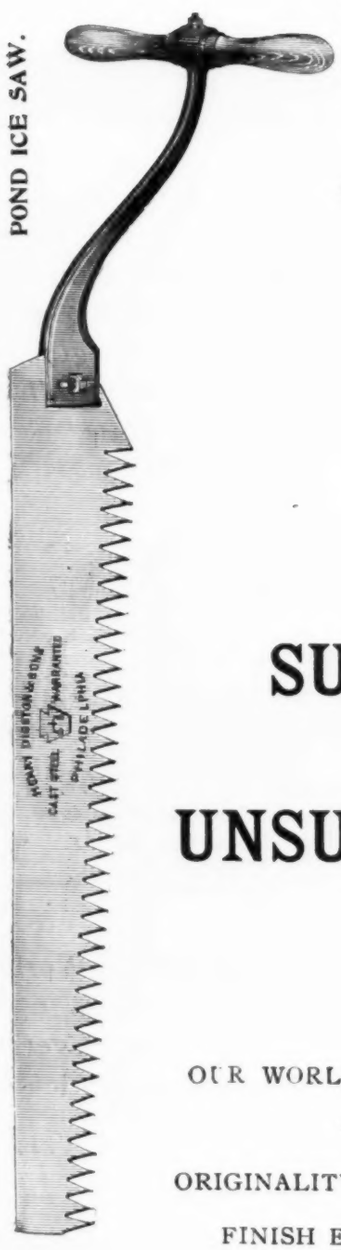

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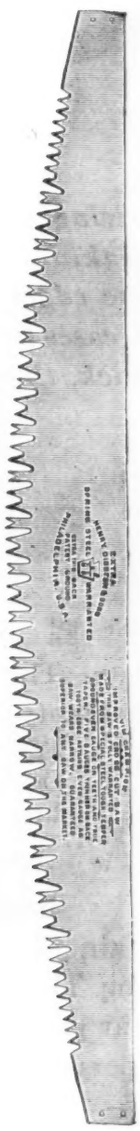

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OUR WORLD'S COLUMBIAN EXPOSITION SPECIAL AWARD:

"DISSTON SAWS ARE *UNEXCELLED.*

ORIGINALITY OF DESIGN AND SUPERIORITY OF QUALITY AND FINISH ENTITLE THEM TO HIGHEST COMMENDATION."

Others claim a Special Award, but we possess it.

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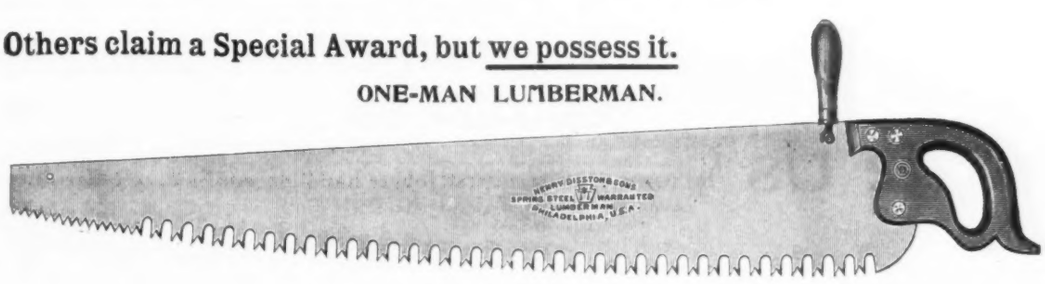

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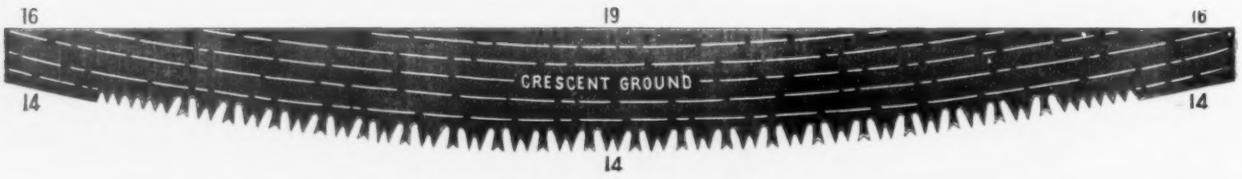
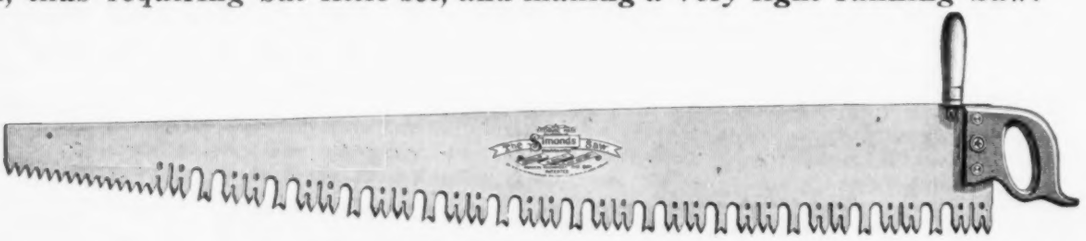
A Simple Story Simply Told.

The *Simonds Crescent Ground* and *One-Man Cross-cut Saws* received a *Special Medal* and *Diploma* at the World's Columbian Exposition, Chicago, 1893.



The Award reads as follows: *"For process of tempering to form, thus giving absolute uniformity of temper, a stiffness that never leaves them, and making possible the use of a high grade of steel. The crescent grinding gives the edge, or teeth, an even gauge or thickness throughout the entire length, increases the back ends of Saw two gauges, and makes the Saw thinner in middle of back, thus requiring but little set, and making a very light running Saw."*



The Simonds Crescent Ground Cross-cut Saw is sold subject to following warranty:

We (The Simonds M'f'g Co., established 1832) guarantee that the Crescent Ground Saw will cut 10 per cent. more timber, same labor being used, than any other brand of Saws made in the United States.

Besides the above (our *Special Award* on Cross-cut Saws at the World's Fair, Chicago, 1893), we have three other Diplomas, and two other medals, making Three medals and Four Diplomas awarded us at that Exposition, covering our goods in general, and many important points of manufacture in particular, operated and controlled by us alone.

The Pick of Jobbers in the United States handle the SIMONDS Crescent-Ground Cross-Cut Saw.

Write Us for name of your nearest Jobber handling our Saw, or order direct of us.

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88 First St., PORTLAND, ORE. 119 Jackson St., SEATTLE, WASH.

SIMONDS MFG. CO., Ltd., 213 Magazine St., NEW ORLEANS, LA.
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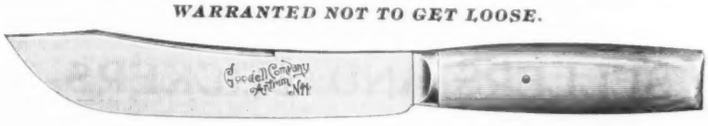
LEADERS.

You Can't Make Good knives any more than good bread without the right material, and even if you have the right material you can't make good knives if you don't know how to manipulate that material.

Solid Cocobolo Swell Handle with Bolster.

WARRANTED NOT TO GET LOOSE.



No. 146, 5, 5½, 6, 6½, 7 and 8 inch.

Five Rivet, Scaletang Beech Handle.

NOT SO MUCH TO LOOK AT, BUT A CUTTER.

No. 446, 5, 5½, 6, 6½, 7, 8, 9, 10, 11, 12, 13 and 14 inch.

The Steel That Goes into Goodell Butcher Knives is made for Goodell Butcher Knives and is found in no others. It is the same we have used for years. A quarter century experience has taught us how to manipulate that steel to produce the best results.

It costs more to make a good knife than a poor one, but not so much more as you might think (if you know how).

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If you want a clipper "with a reputation" insist on the "Stewart Patent." There is no other "just as good" and they will cost you no more than the inferior kind.

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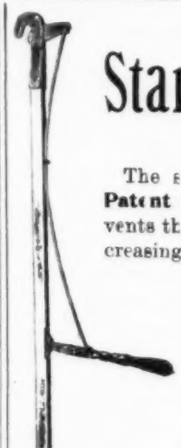

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The sectional cut shows this implement with our **Patent metallic brace plate,** which absolutely prevents the pole from splitting or breaking. Greatly increasing strength and durability.

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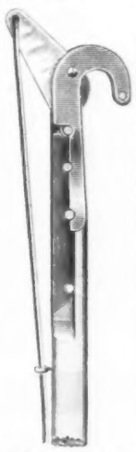

Pole and iron cut away showing brace plate.

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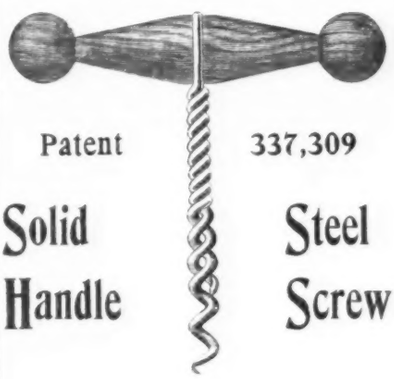

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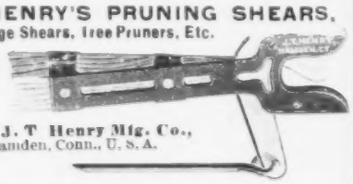

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Ninety sets of wood-turning tools, eleven in a set.
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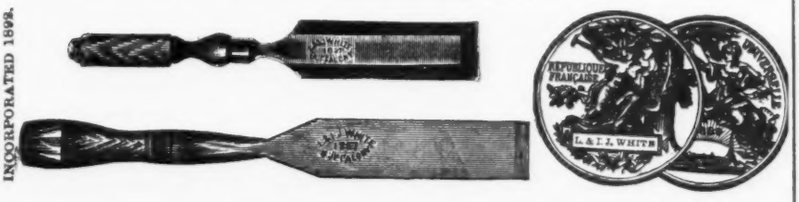

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IMPORTANT DECISION RELATING TO THE

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The U. S. Circuit Court, Southern District of New York, Judge Townsend, has rendered a decision in the suit of "R. Heinisch's Sons Co. vs. Hermann Boker & Co."

"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

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NOT CONNECTED WITH ANY SHEAR COMBINATION.

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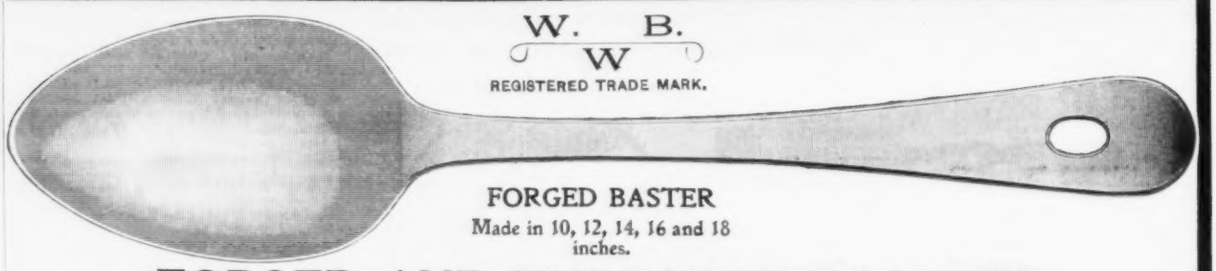

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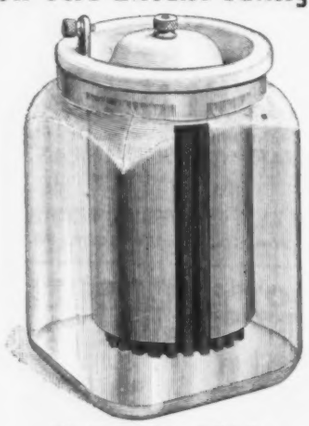

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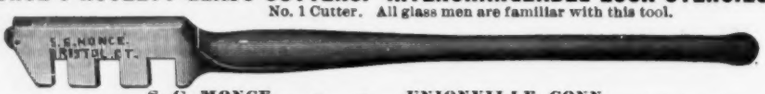

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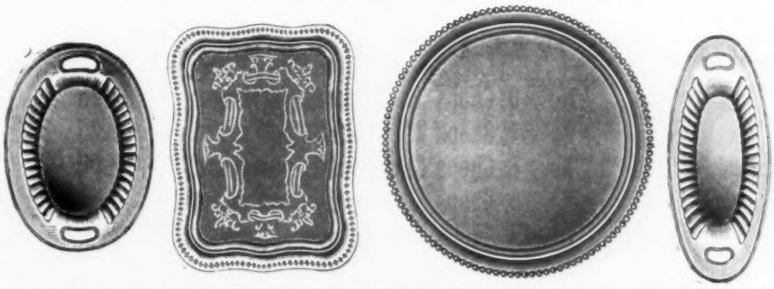

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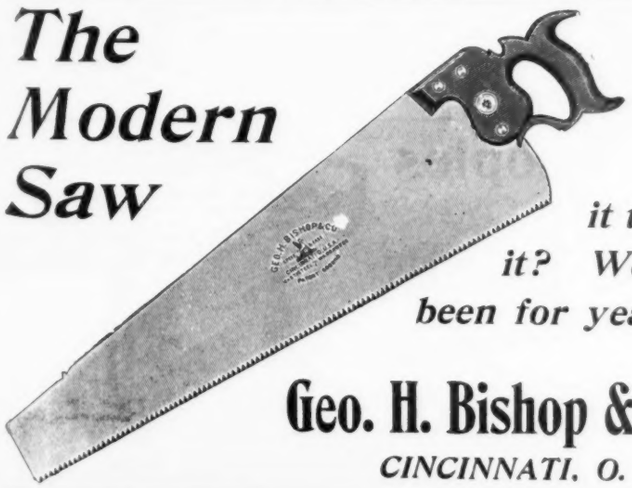

as made by us is the Acme of perfection, not because we say so, but because our thousands of users all over the world state it to be a fact. And why shouldn't it? We make nothing but saws, have been for years yours for good saws.

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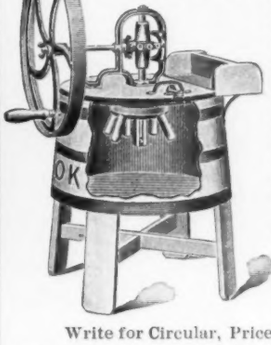

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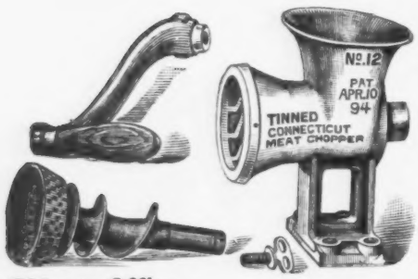

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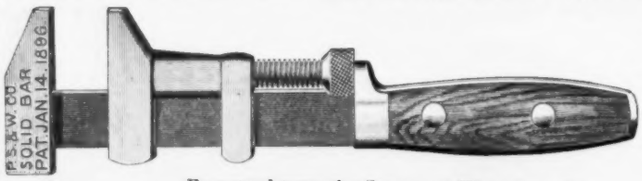

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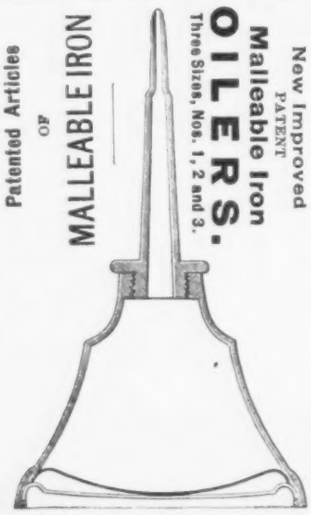

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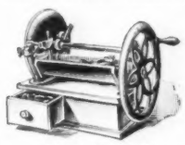

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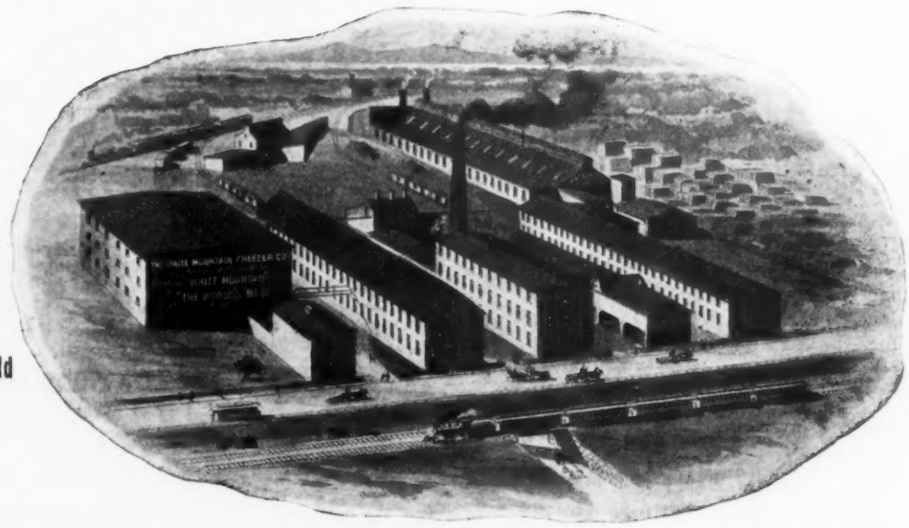

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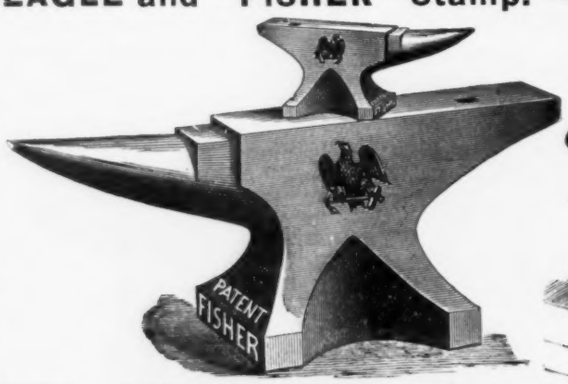

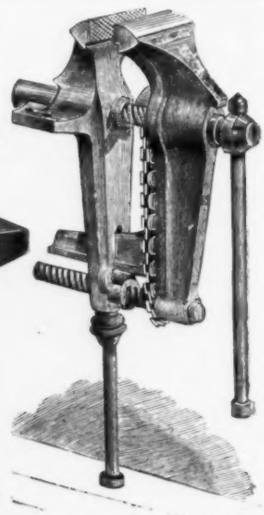

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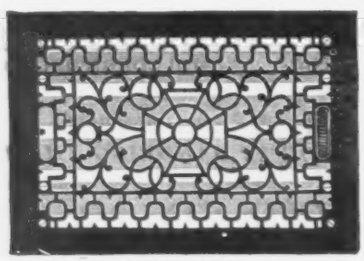

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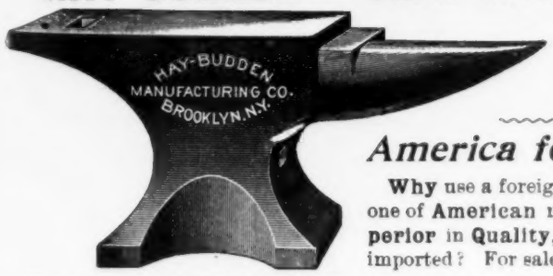

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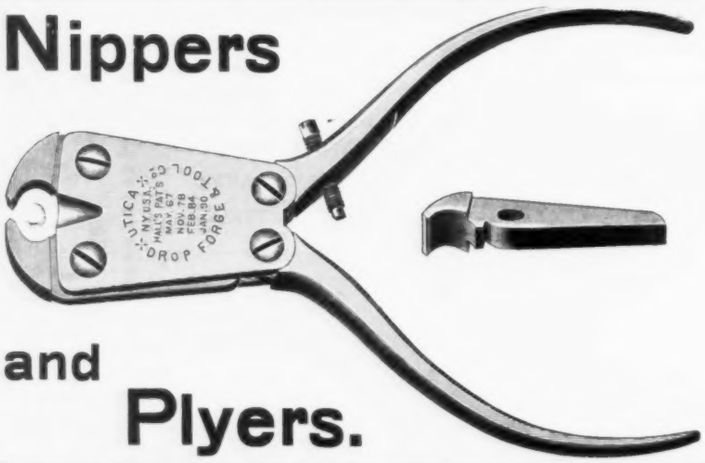

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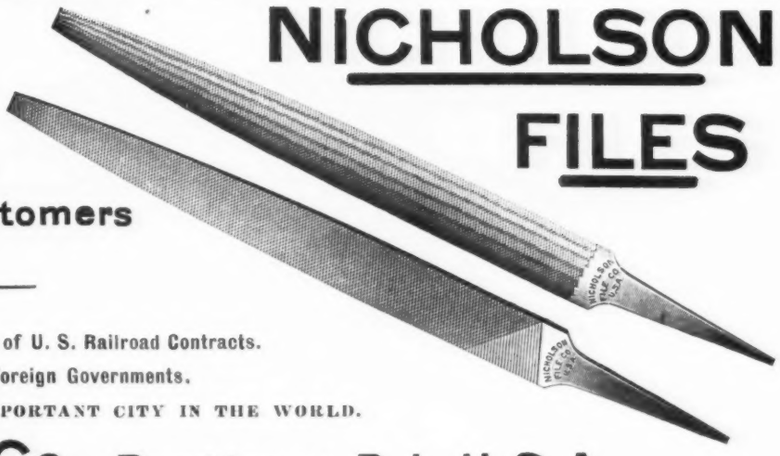

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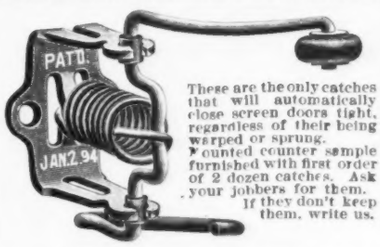

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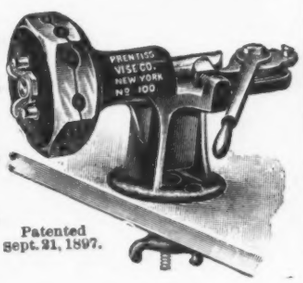

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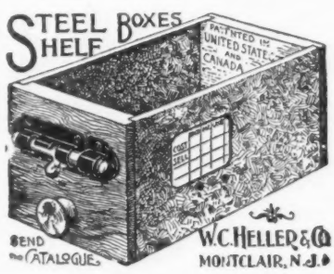

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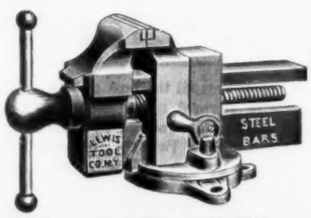

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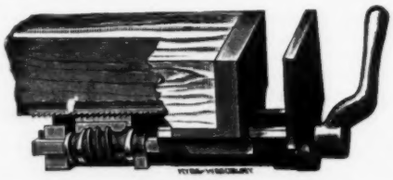

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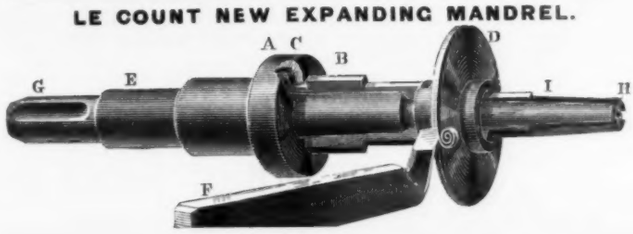

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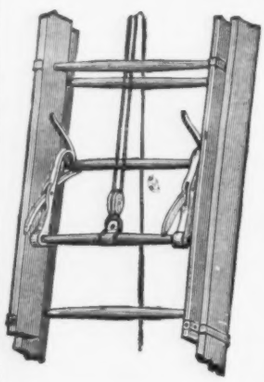

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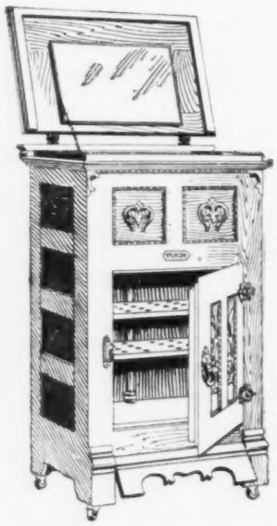

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The Yukon is made in two styles, with ***Removable Flues,*** and with the ***entire Ice Chamber Removable.***

We note some of the excellent features of the Yukon:

Thoroughly seasoned ash lumber.
Elegance of finish.
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Swinging and removable base board
Solid bronze hardware, Roman gold finished.
Zinc lined. Patent casters.
Galvanized iron flues, ice rack and shelves.

The shelves being so constructed that small dishes placed upon them will not tip over.

Patent Trap, connected with waste pipe in bottom of provision chamber, where it is most accessible, both trap and waste pipe being easily removed, cleaned and replaced, without a back-breaking process or poking with a stick.

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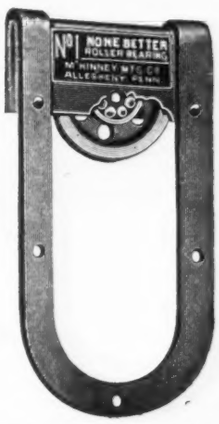

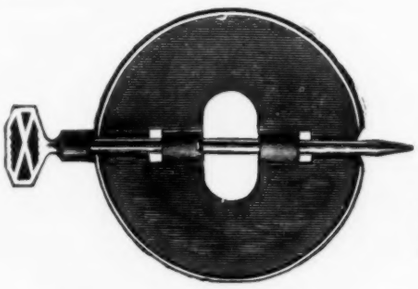

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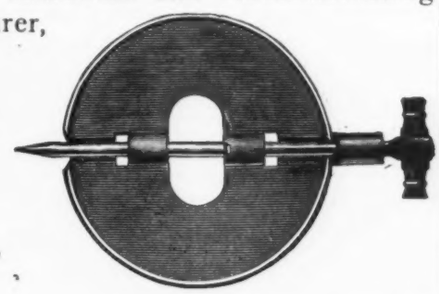

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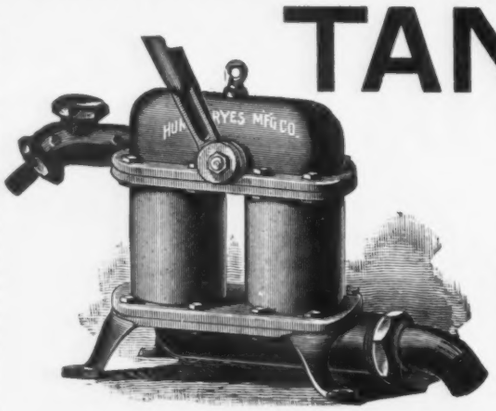

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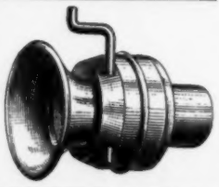

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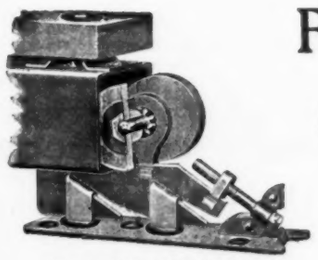

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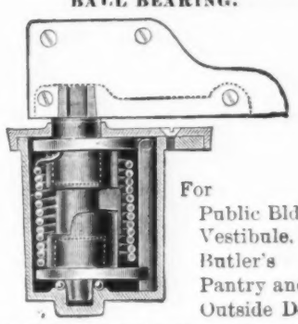

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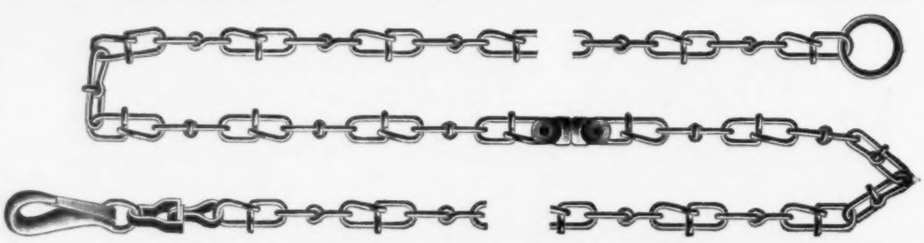

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Made on the principle of a square knot and ***cannot*** be pulled out.

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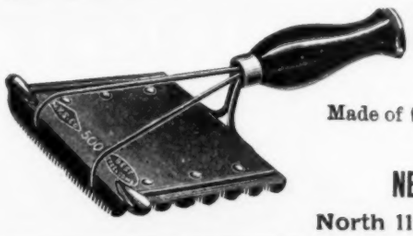

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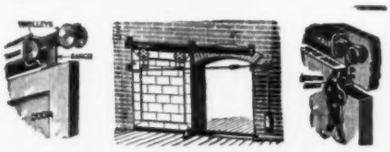

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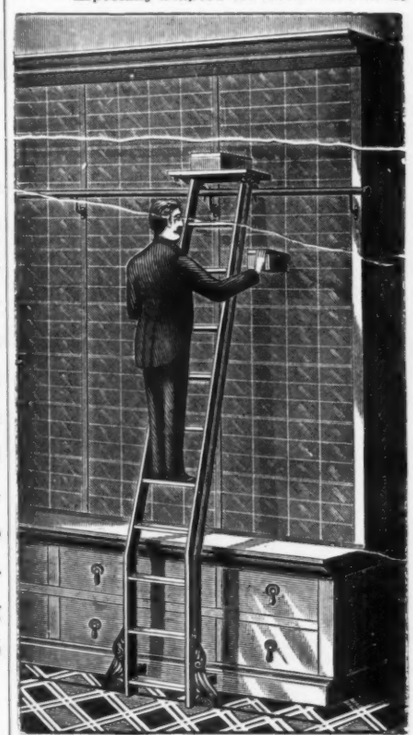
Especially adapted for Hardware Stores.



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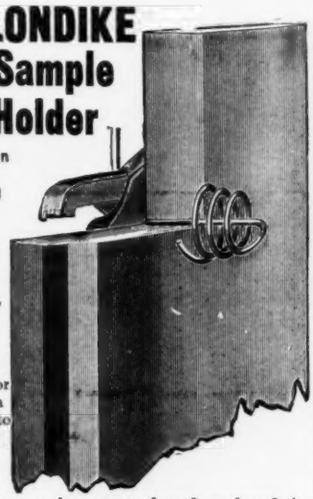

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Holds Anything. No Screws.

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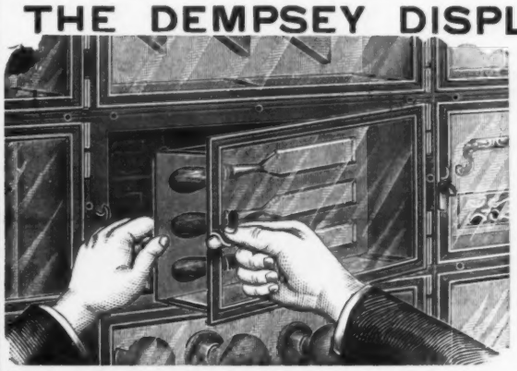

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Stock is never handled until sale is made.

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The finest fixture made and costs no more than the old style.

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FOR THE HARDWARE TRADE
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Made of Wood. No screws or nails used to work out and cut your shelving.

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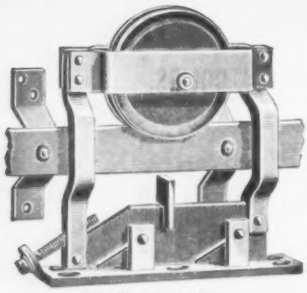

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LANE'S PARLOR DOOR HANGERS.

Ask to see "LANE'S BALL BEARING."

Retains all the valuable features of the "Standard," with the introduction of the best form of

BICYCLE BALL BEARINGS,

in which the construction of both cups and cones conforms to the best practice in modern bicycle construction.

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THE
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This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

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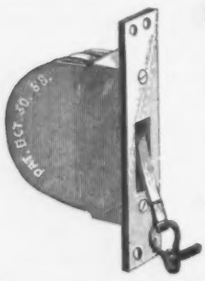

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Caldwell Sash Balance.

It stands the test of time.

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Lull & Porter O. S., "Dixie," L. & P., "Buffalo Reversible" Shutter Hinges, Gate Hinges, Sash Pulleys, Loose Pin Butts Stove Pipe Dampers, Lid Lifters, Hold-back and Single-acting Spring Hinges, etc.

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in Foreign and Domestic Wood.
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LOOK AT THE BRIGHT SIDE OF THINGS TO MAKE BRIGHT.
TRY **BAR-KEEPERS FRIEND**
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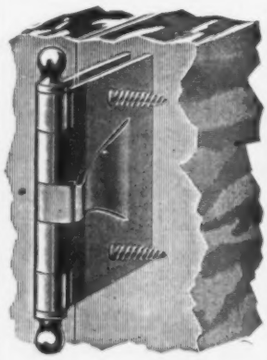
G. W. HOFFMAN, 297 E. Washington St., INDIANAPOLIS, IND.

The Hoffman Hinge.



No more parts than the ordinary springless hinge. Is stamped from spring steel, causing the door to automatically swing either way after passing the center, permitting it to remain wide open or holding it firmly closed. Cheaper per door. Does away with spring catches. Needs only a common screw pull knob. For doors of Cupboards, Side Boards, Ice Boxes, Desks, China Closets, Drop Doors of Linen closets, and for Cellar Windows, &c.

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SILVER LAKE SASH CORD

Has been the standard for thirty years.

MANUFACTURED BY THE SILVER LAKE CO. BOSTON.

Every Hank Bears the Above Label.
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"A NOISELESS DOOR CLOSER."
The
"NORTON"

DOOR-CHECK
...and...
SPRING CO., Sears Building, Boston, Mass.
SEND FOR CIRCULAR.

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HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys.

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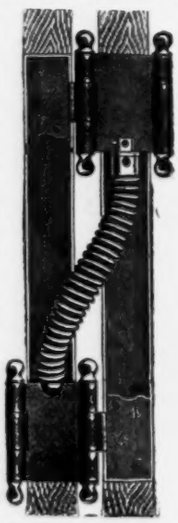

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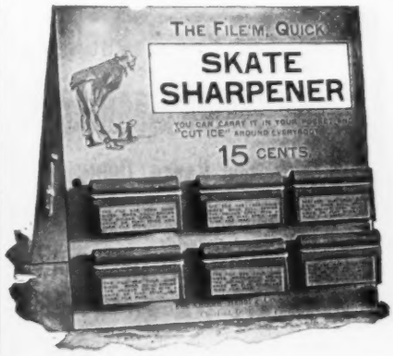

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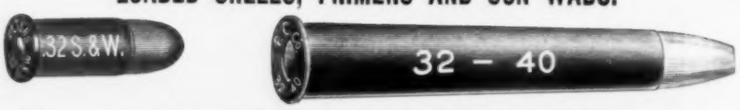

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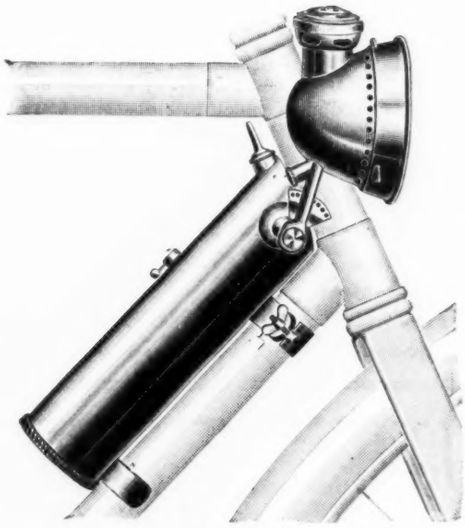

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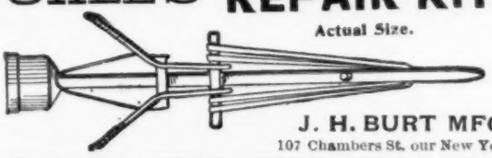

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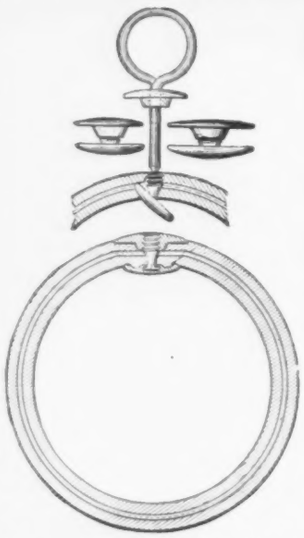

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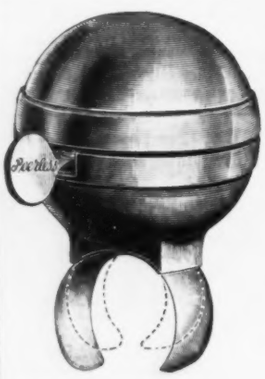

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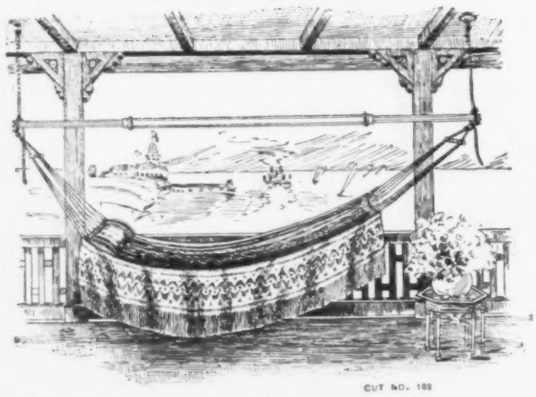

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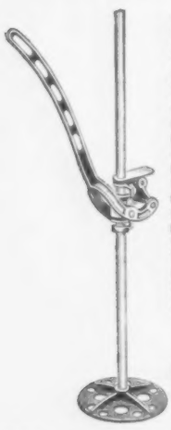

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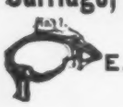

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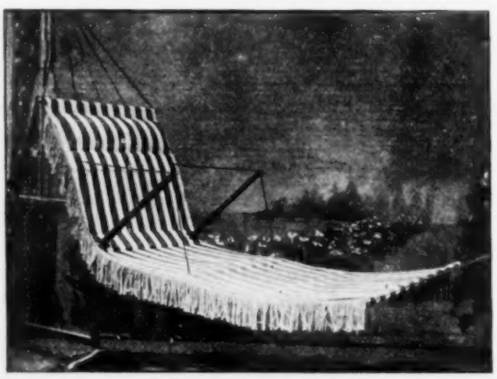

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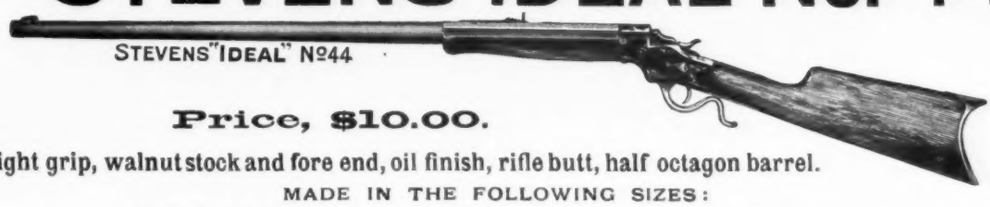

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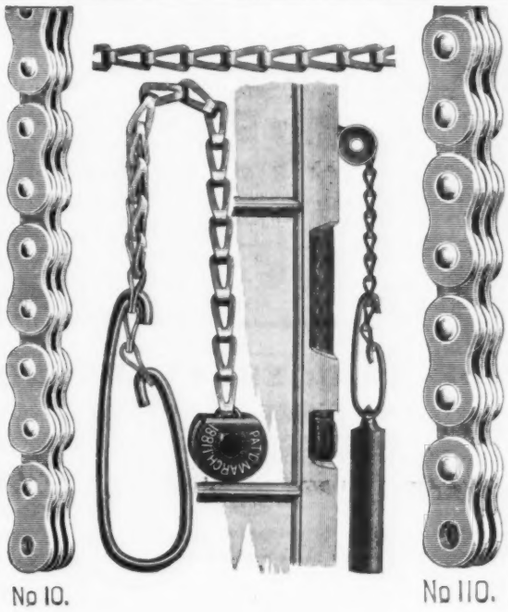

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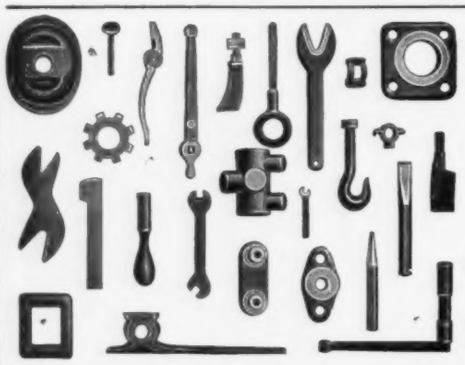

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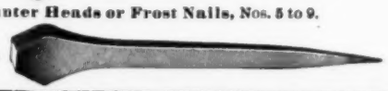

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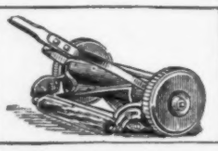

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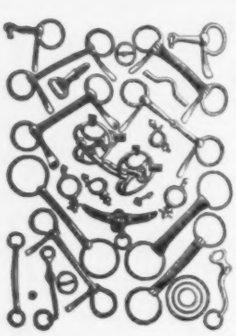

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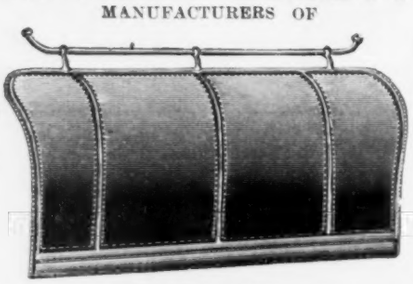

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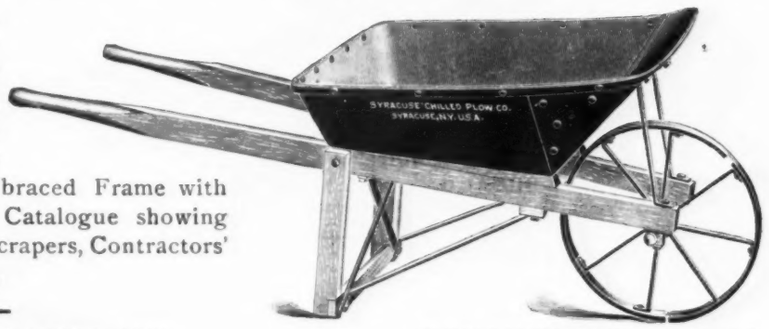

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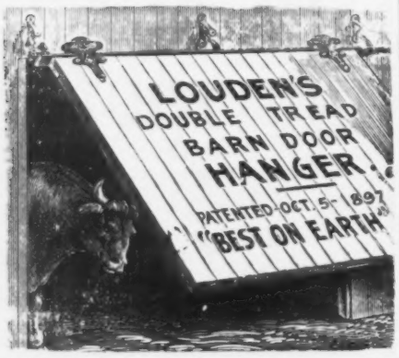

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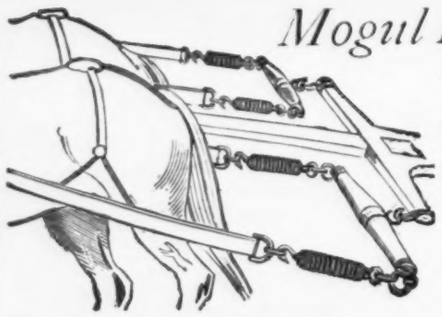

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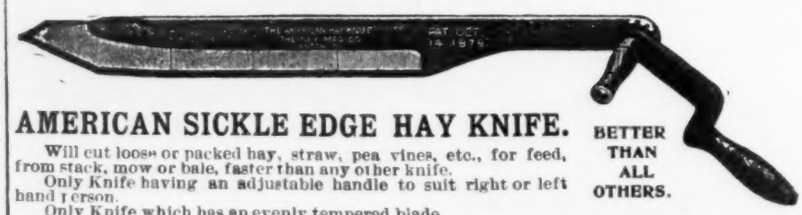

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Maule, Francis I., Philadelphia, Pa.

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Withington & Cooley Mfg. Co., Jackson, Mich.

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Baird, U. Machinery Co., Pittsburgh, Pa.
Clayton Air Compressor Works, 26 Cortlandt Street, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
Norwalk Iron Works, S. Norwalk, Ct.
Rand Drill Co., 100 Broadway, N. Y.

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Markham Air Rifle Co., Plymouth, Mich.

Air Moving Machinery.
Howard & Morse, 45 Fulton, N. Y.

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Blackwell, Geo. G., Sons & Co., Liverpool, England.

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Pittsburgh Reduction Co., Pittsburgh.
Scovill Mfg. Co., Waterbury, Conn.

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Peters Cartridge Co., Cincinnati, O.

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Ankle Brace.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

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Reading Hardware Co., Reading, Pa.

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Trenton Malleable Iron Co., Trenton, N. J.

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Automatic Mch. Co., Bridgeport, Conn.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
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Manville, E. J. Mch. Co., Waterbury, Conn.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

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Hoyt Metal Co., St. Louis, Mo.
Magnolia Metal Co., 266-267 West St., N. Y.
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Reeves, Paul S., Philadelphia, Pa.
Standard Smelting Wks., 389 Canal St.

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Griswold Wire Co., Braddock, Pa.
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Naugatuck Mfg. Co., Naugatuck, Conn.

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Green Ridge Iron Works, Scranton, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Minnesota Iron & Steel Co., Minneapolis.
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Wallace Bros., Wallingford, Conn.

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Horton Mfg. Co., Ft. Wayne, Ind.

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Ball Bearing Co., Boston, Mass.

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Johnson, Geo., Catasauqua, Pa.
Starr Bros. Bell Co., East Hampton, Ct.

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Dixon, Jos. Crucible Co., Jersey City, N.J.

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Remington Arms Co., Ilion, N. Y.
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Bridgeport Chain Co., Bridgeport, Ct.

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Snow Wire Works, Rochester, N. Y.

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Chambers Bros. Co., Philadelphia.

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Rhode Island Tool Co., Providence, R. I.
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Reeves, Paul S., Philadelphia, Pa.
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Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
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Harrington, Dexter & Son, Southbridge, Mass.
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Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
McKinnon Dash Co., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hartley & Graham, 313 & 315 Broadway, New York.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons. S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N. Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1131 Broadway, N. Y
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McNeal Pipe & Foundry Co., Philadelphia, Pa.
Martin, Wm. R., Lancaster, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore, Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

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Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth st., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Christmas Tree Holders.
Penn Hardware Co., Reading, Pa.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Soas Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Collapsible Tubes.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Ware.
Rochester Stamping Works, Rochester, N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Railway Supply Co., St. Louis, Mo.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Sennett Geo. B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Box, Alfred & Co., Philadelphia, Pa.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Byram & Co., Detroit, Mich.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
New York Stamping Co., Brooklyn, N. Y.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Dampers.
Williams, A. C., Ravenna, O.

Dashes and Fenders.
McKinnon Dash Co., Buffalo, N. Y.

Decorated Tin Goods.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Machine Co., Bridgeton, N. J.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg. Co., Cleveland, O.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Norton Door Check & Spring Co., Boston.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N. Y.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Titusville, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Stover Novelty Works, Freeport, Ill.
Weiss Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Drilling Machines, Automatic.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Chas., E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia, R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Standard Co., Boston, Mass
Taplin Mfg. Co., Forestville, Conn.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Schonfield & Co., Freeport, Ill.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa.
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
New Castle Engineering Works, Pittsburgh, Pa.
Phillips, F. R. Sons, Phila., Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Bay State Iron Works, Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engine Stops.
Monarch Mfg. Co., 39 Cortlandt St., N. Y.

Engravers.
Mugford, A., Hartford, Conn.

Exhibition, Export.
International Land & Exhibition Co., New York.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exterminators, Insect.
Smith, D. B. & Co., Utica, N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
National Pipe Bending Co., New Haven,
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
Dwiggins Wire Fence Co., Anderson, Ind
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Finished Castings.
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co. Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Flue Cutters.
Groves & Haines, Philadelphia, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Bendee Wire Brush Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fruit Jar Trimmings.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Fuses.
Ensign, Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. H., Holland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R.
Florence Machine Co., Florence, Mass.

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Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Standard Machine Co., Holyoke, Mass.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Hack Saw Blades.
Goodell Bros Co., Greenfield, Mass.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Keller & Bros., Newark, N. J.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co., Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.
Jones & Laughlins, Ltd., Pittsburgh, Pa.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Cnas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Penn Hardware Co., Reading, Pa.
Stanley Works, New Britain, Conn.
Supplies Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hat Polishers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Box, Alfred & Co., Phila.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rochester Stamping Works, Rochester, N. Y.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Gerlach, Peter & Co., Cleveland, O.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lüttenberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.

Job Lots, Hardware.
Chicago House Wrecking Co., Chicago, Ill.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio.
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.

Levels.
Standard Tool Co., Athol, Mass.

Locks and Knobs.
Penn Hardware Co., Reading, Pa.
Reading Hdw. Co., Reading, Pa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Coulter & McKenzie Mach. Co., Bridgeport, Conn.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Ferracute Machine Co., Bridgeton, N. J.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Poulterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Knives.
Loyd, John, 558-562 Water St., N. Y.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Hartford Mch. Screw Co., Hartford, Ct.
Miles, F. S., Phila., Pa.
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N. Y

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Co. per Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Attachment for Lathes.
Adison Mfg. Co., Phila., Pa.

Milling Machines.
Becker, John, Mfg. Co., Fitchburg Mass.
Brown & Sharpe Mfg. Co., Providence,
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gliem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dailett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Nail Machinery.
Atherton, Jesse, Auburn, R. I.
Bates Machine Co., Joliet, Ill.
Crescent Mfg. Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.

Nail Sets.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.
Silver Lake Co., Boston Mass.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

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Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Walter & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Haik & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Shenango Valley Steel Co., New Castle, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.
Trimont Mfg. Co., Roxbury, Mass.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Pennsylvania Tube Works, Pittsburgh, Pa.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N. Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mf. Co., Bridgeport, Conn.
Scholthorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws.
Stover Novelty Works, Freeport, Ill.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dieneit & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Mach. Co., Bridgeton, N. J.
Manville, E. J. Mch. Co., Waterbury, Ct.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn
Smith, Seymour & Son, Oakville, Conn.

Pruning Shears.
Smith, Seymour & Son, Oakville, Conn.

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Gould's Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Gould's Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
Mersick, C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark, N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N. Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham, 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Machines.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown, O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Keuffel & Esser Co., 127 Fulton St., N. Y.
Stanley Rule & Level Co. 29 Chambers,

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff Novelty Co., Gibsonburg, O.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Foster, H. H., Ca of Vt.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Saw Vises.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scales.
American Cutlery Co., Chicago, Ill.
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Grant, Robt. & Co., 253 Broadway, N. Y.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Check Co., Chicago, Ill

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Hartford Mach. Screw Co., Hartford, Ct.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Franklin Moore Co., Winsted, Conn.
Hartford Mch. Screw Co., Hartford, Ct
Haskell, Wm. H. Mfg. Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Semi-Steel.
Birmingham Iron Foundry, Birmingham.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Stroud, E. H. & Co., Chicago, Ill.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Morley Bros., Saginaw, Mich.

Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Markle Lead Work's, St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soles.
Baxter, Schenkelberger & Co., Boston.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Speed Limits.
Monarch Mfg. Co., 39 Cortlandt St., N. Y.

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Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Dunbar Bros., Bristol, Conn.
Lord Bros Mfg Co., Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Hoffman Hinge Co., Cleveland, Ohio.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N.Y.

Stamping, Sheet Metal.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
D'Este & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
D'Este & Seeley Co., Boston, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.
Sennett, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
D'Este & Seeley Co., Boston, Mass.

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport,
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Shenango Valley Steel Co., New Castle, Pa.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Manufacturers' Agents.
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St., N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke,
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport Conn.
Caru, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield,

Stokers.
Box, Alfred & Co., Philadelphia, Pa.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Cleveland, O.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stoves, Oil, Vapor & Gasoline.
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton,
Sweetser, W. A., Brockton, Mass.

Tap Holder.
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Besly, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Proadman Bros., Meriden, Conn.
Reece, E. P. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield,

Tea Kettles.
Rochester Stamping Works, Rochester.

Tea and Coffee Pots.
Rochester Stamping Works, Rochester.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore.

Tire Repair Outfits.
Burt, J. H. Mfg. Co., Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.,

Tools.
Besly, C. H. & Co., Chicago, Ill.
Brown, R. H. & Co., New Haven, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls,
Millers Falls Co., 93 Reade, N. Y.
Springfield Machine Screw Co., Springfield, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
Stevens J., Arms & Tool Co., Chicopee.

Tools, Blacksmith and Wheelwright.
Butts & Ordway Co., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg., Co., Greenfield Mass.

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Schneider & Trenkamp Co., Cleveland, O.

Tote Boxes.
Clark, W. J. & Co., Salem, O.

Trowels.
Bishop, Geo. H. & Co., Cincinnati, O.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.

Trucks.
Boston & Lockport Block Co., Lockport,
Kilbourne & Jacobs Mfg. Co., Columbus,
Syracuse Chilled Plow Co., Syracuse, N.Y

Tubes, Seamless Drawn Copper, Brass and Bronze.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth st., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phœnix Tube Co., Brooklyn, N. Y.

Tubing, Steel.
Leng's, John S. Son & Co., 4 Fletcher St.
National Tube Wks. Co., McKeesport, Pa.
Pennsylvania Tube Works, Pittsburgh, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills.
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.
Whitman & Barnes Mfg. Co., Akron, O.

Typewriters.
Wyckoff, Seamans & Benedict, St. Louis, Mo.

Upholsterers' Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Turner & Seymour Mfg. Co., Torrington.

Valves, Gas, Water and Steam.
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
Crosby Steam Gage & Valve Co., Boston.
Eastwood Wire Mfg. Co., Belleville, N. J.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
Wood, R. D. & Co., Philadelphia, Pa.

Vehicles.
Parry Mfg. Co., Indianapolis, Ind.

Ventilating Fans.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton St., N. Y.

Vises.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
Lewis Tool Co., 44 Barclay St., N. Y.
Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks.
Anderson Pole & Shaft Co., Anderson, Ind.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn

Washers.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson & Smith, Worcester, Mass.

Washing Machines.
Brammer, H. F. Mfg. Co., Davenport, Ia.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weaners.
Carroll Muzzle Co., Carroll, Iowa.

Well Supplies.
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N.Y.

Whistles.
Mossberg Wrench Co., Attleboro, Mass.

Wind Mills.
Flint & Walling Co., Kendallville, Ind.

Window Cord.
Samson Cordage Works, Boston, Mass.

Window Fasteners.
Stanley Works, New Britain, Conn.

Window Stops.
Taplin Mfg. Co., Forestville, Ct.

Wire.
Dillon-Griswold Wire Co., Sterling, Ill.
Indiana Wire Fence Co., Crawfordsville, Ind.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Shenango Valley Steel Co., New Castle, Pa.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey Wire Works Co., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods.
Brooks, M. S. & Sons, Chester, Conn.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hendee Wire Brush Co., Milwaukee, Wis
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

Wire Drawing Machinery.
Morgan Construction Co., Worcester.
Mossberg & Granville Mfg. Co., Providence, R. I.

Wire Forming Machinery.
Adt, John & Son, New Haven, Conn.
American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.

Wire Nails.
American Steel & Wire Co., Chicago, Ill.
Indiana Wire Fence Co., Crawfordsville,
Milwaukee Tack Co., Milwaukee, Wis.
Pittsburgh Wire Co., Pittsburgh, Pa.
Shenango Valley Steel Co., New Castle, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton,
Whitney, A. R. & Co., 29 Broadway, N.Y.

Wire Nail Machinery.
Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

Wire Parts.
Jenkinson, R. C. & Co., Newark, N. J.

Wire Rods, Steel.
American Steel & Wire Co., Chicago, Ill.
Pittsburgh Wire Co., Pittsburgh, Pa.
Shenango Valley Steel Co., New Castle, Pa.
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Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel.
Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wood Screw Machinery.
Cook, Asa S. & Co., Hartford, Ct.

Wood Working Machinery
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches.
Bemis & Call Hdw. & Tool Co., Springfield, Mass.
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Trimont Mfg. Co., Roxbury, Mass.
Whitman & Barnes Mfg. Co., Akron, O.
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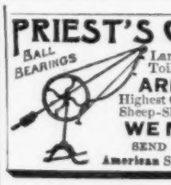

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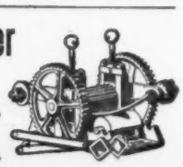

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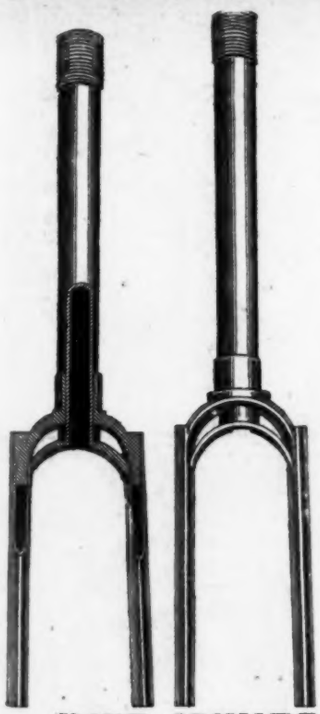

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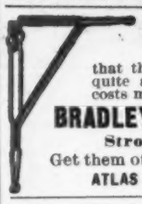
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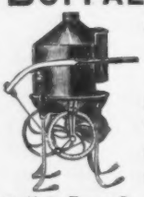
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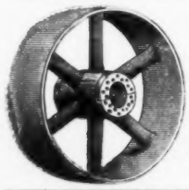

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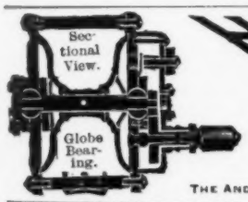

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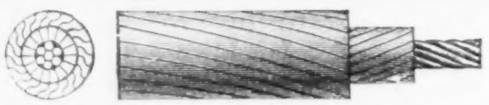

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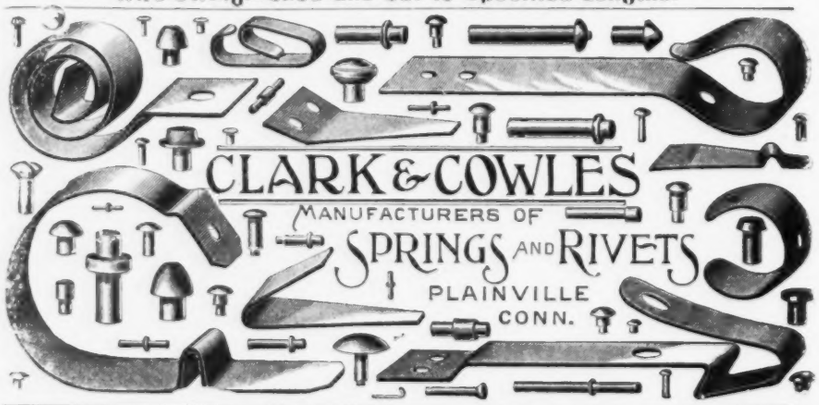

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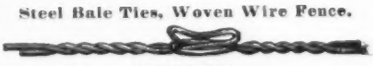
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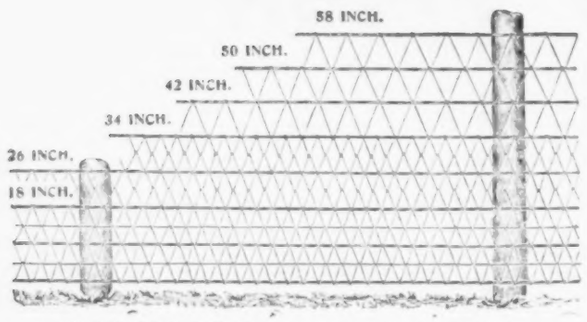

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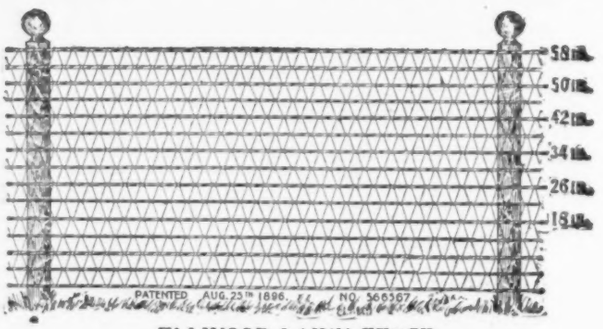

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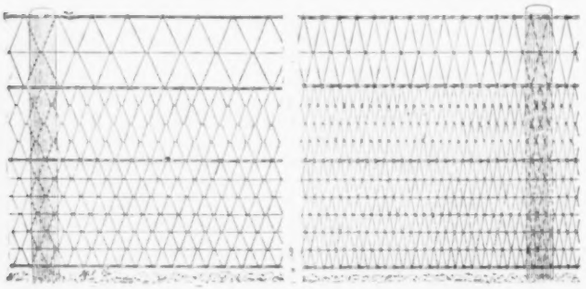

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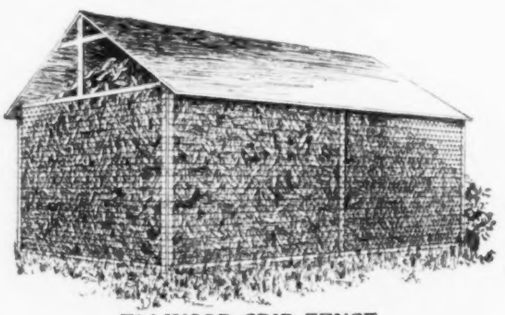

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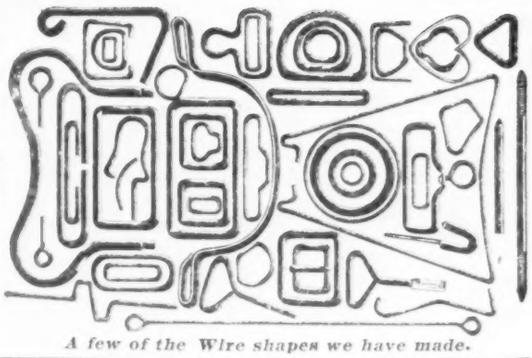

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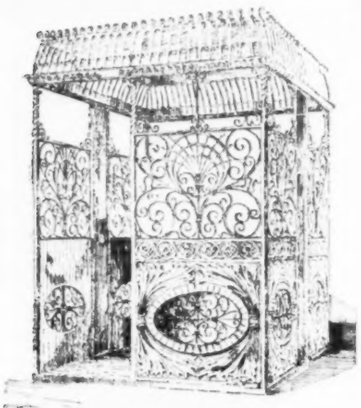

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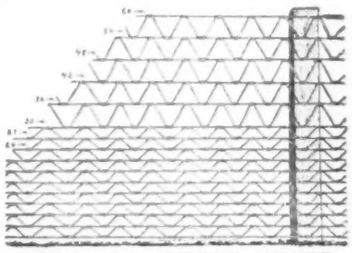

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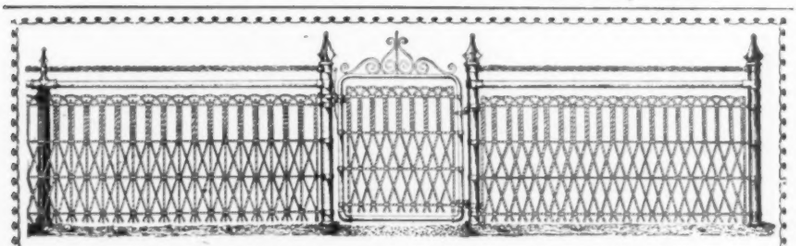

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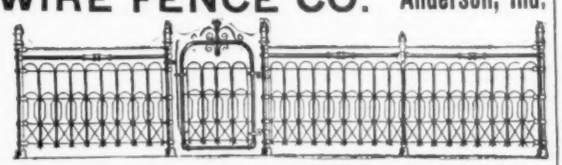

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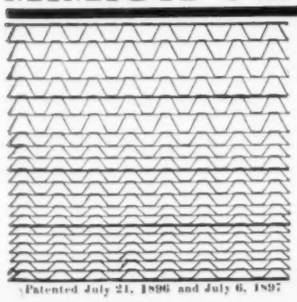

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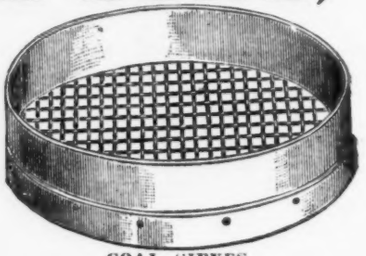

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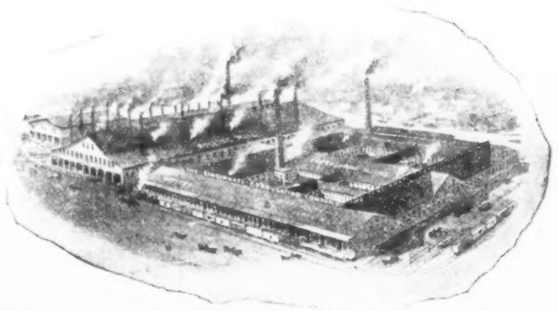

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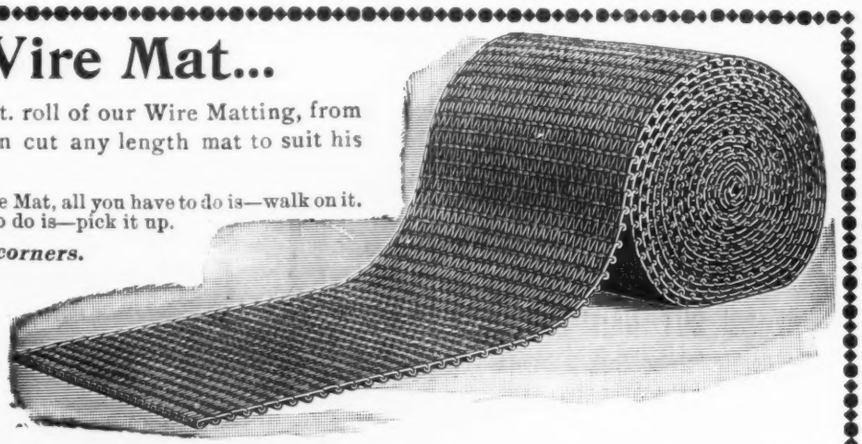

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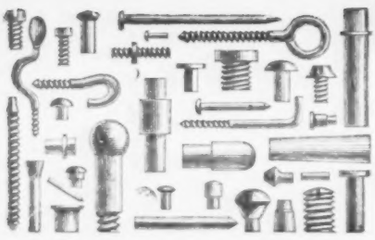

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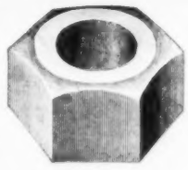

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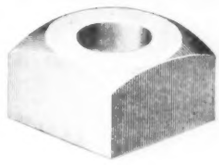

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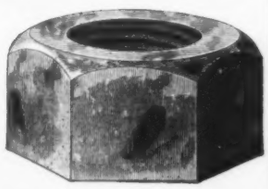

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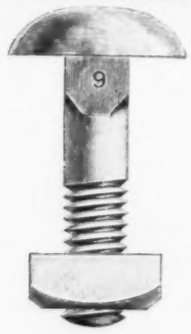

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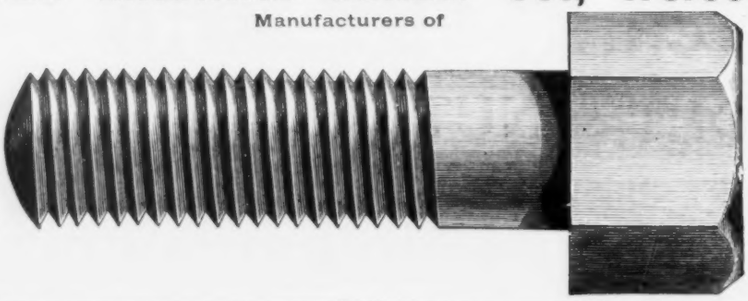

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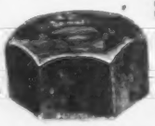

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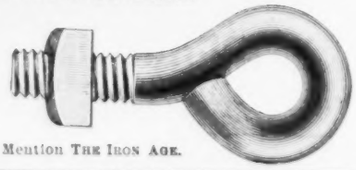

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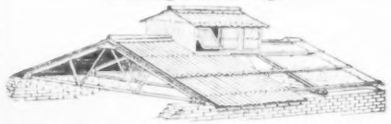

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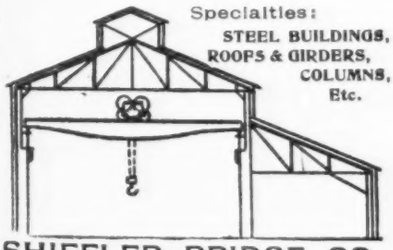

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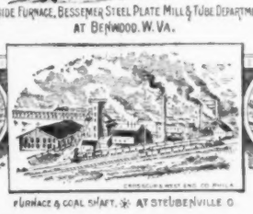
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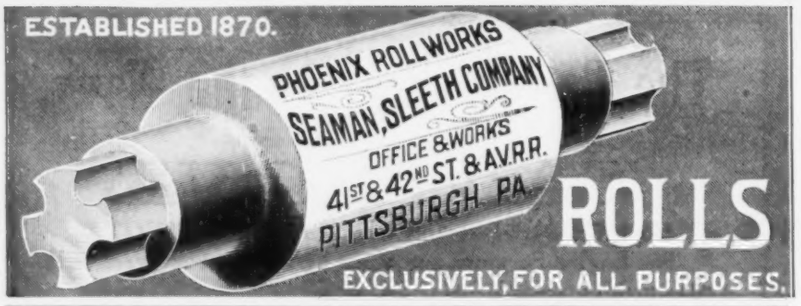

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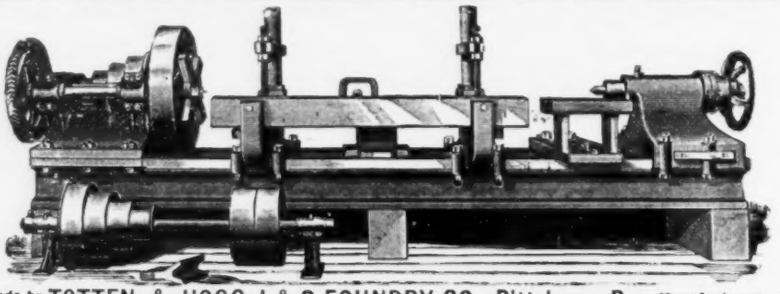

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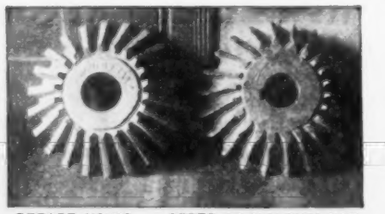

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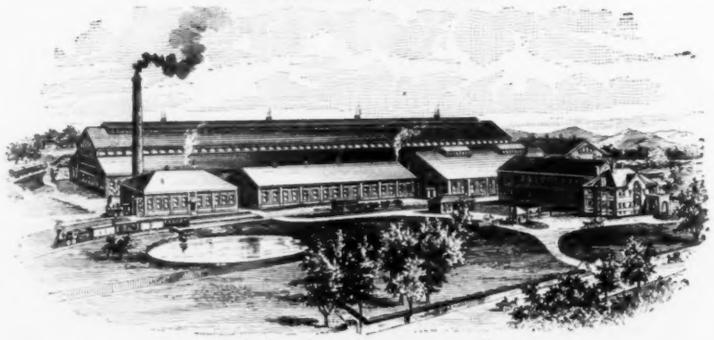

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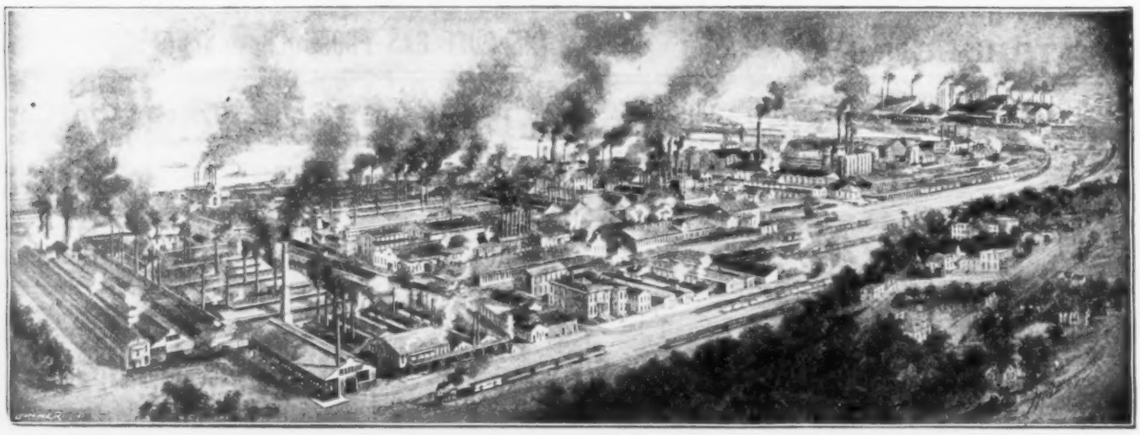

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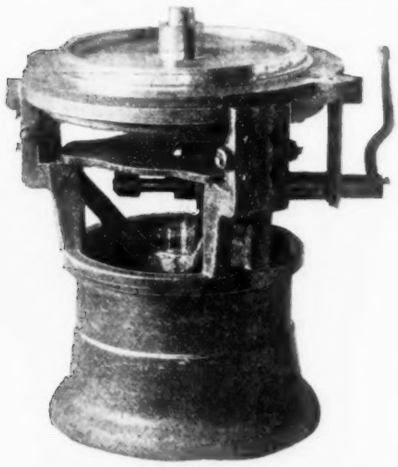

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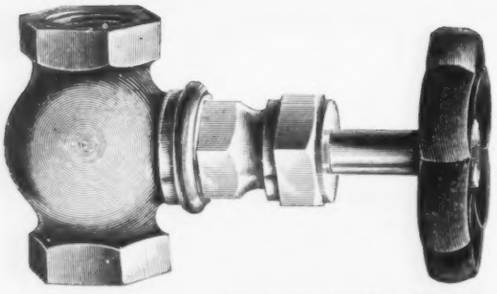

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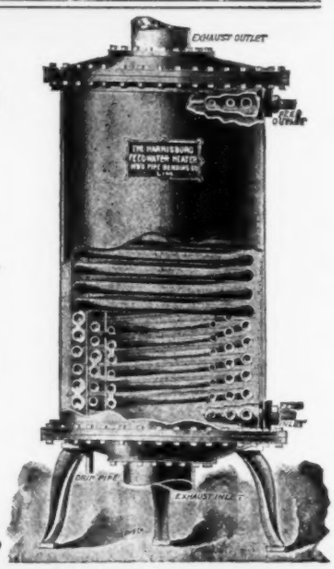

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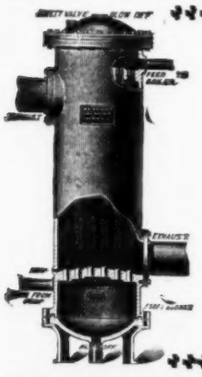

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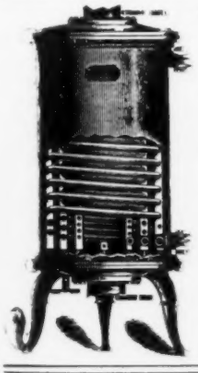

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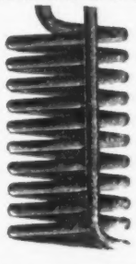

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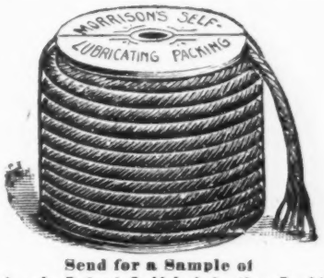

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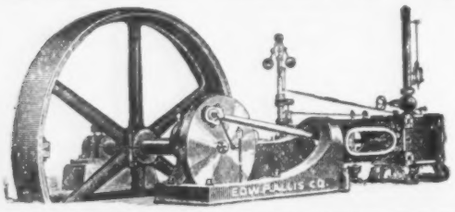

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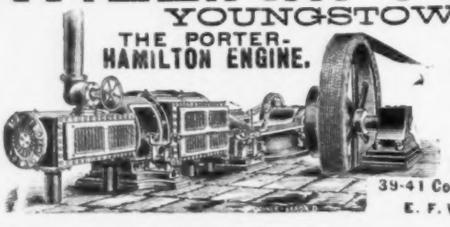

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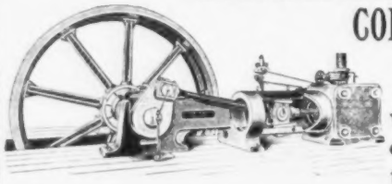

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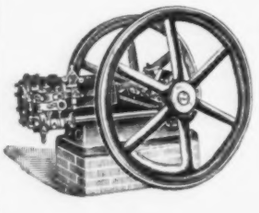

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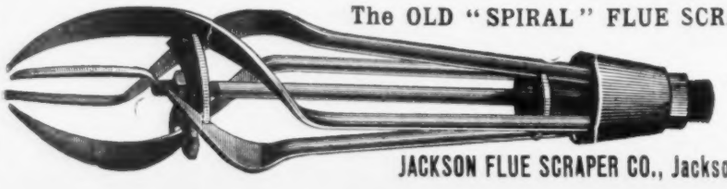

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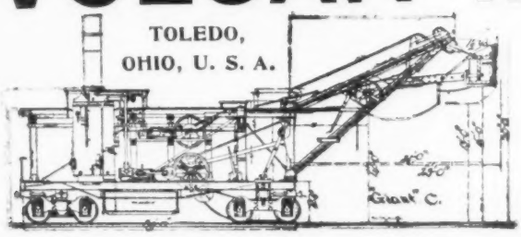

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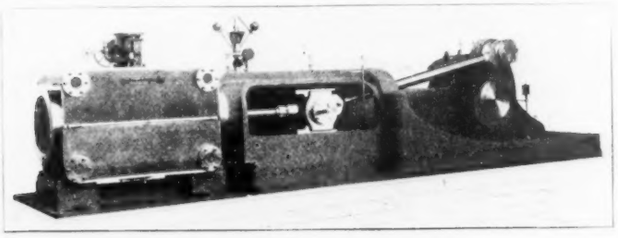

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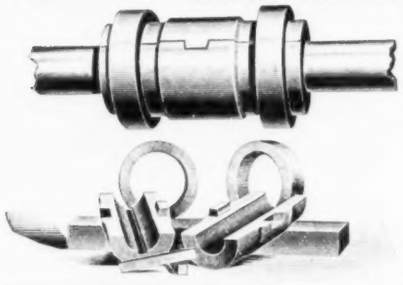

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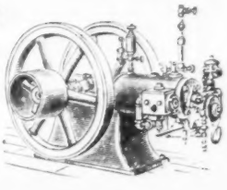

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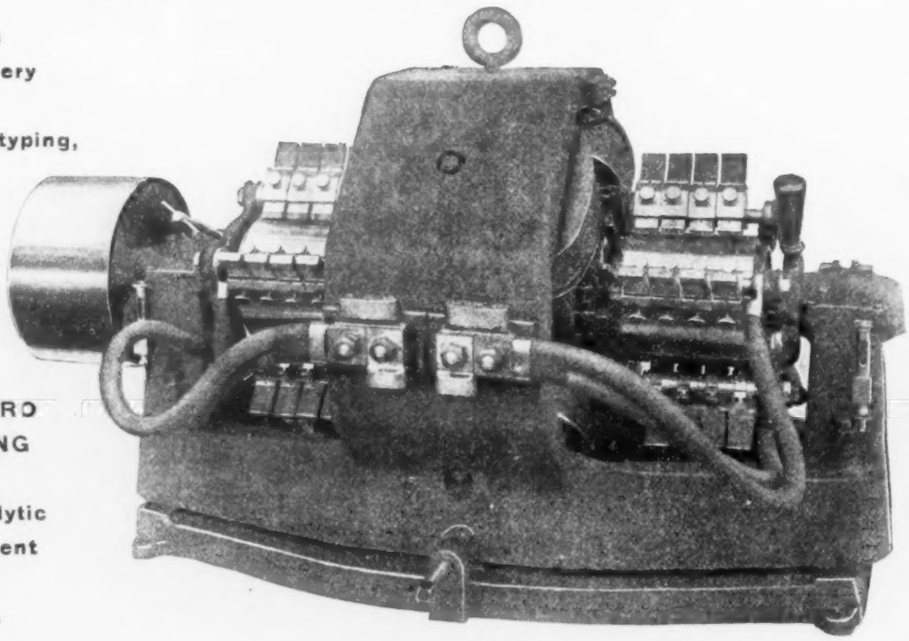

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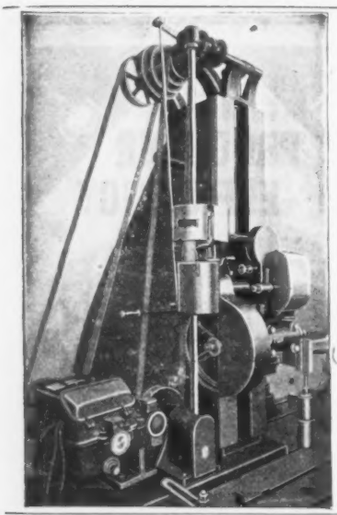

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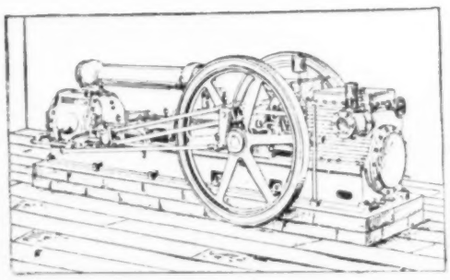

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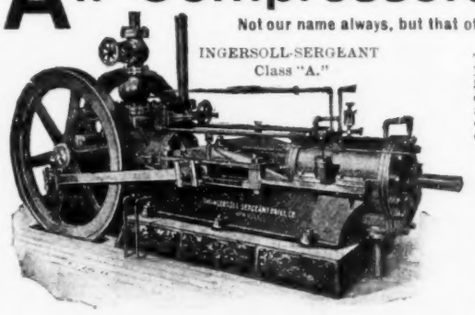

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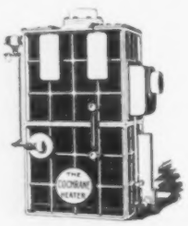

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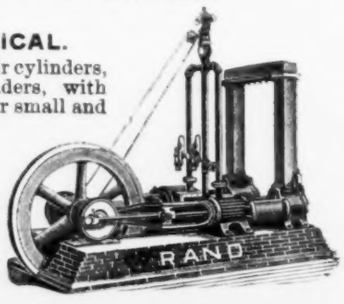

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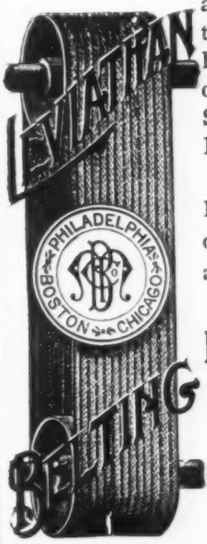

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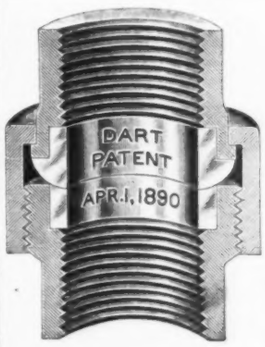

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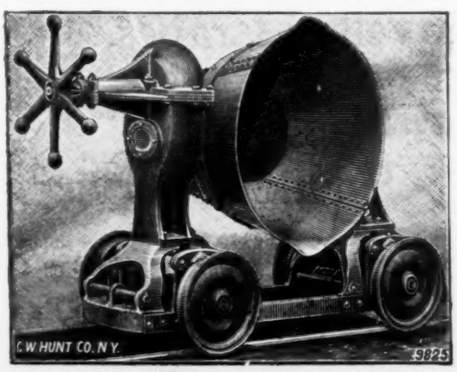

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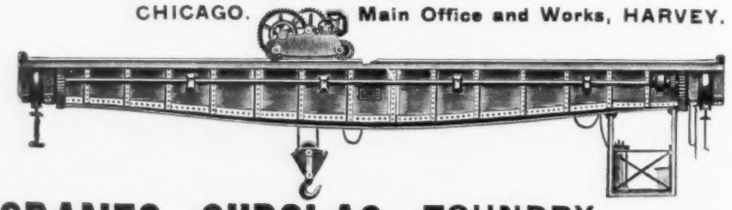

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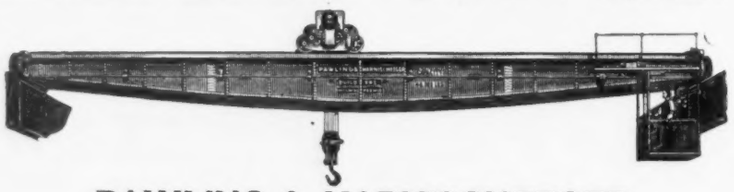

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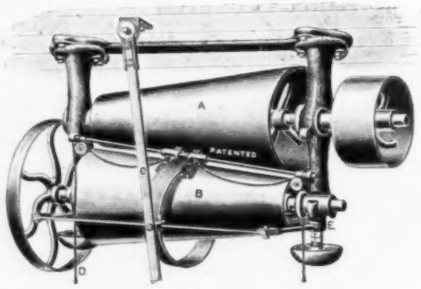

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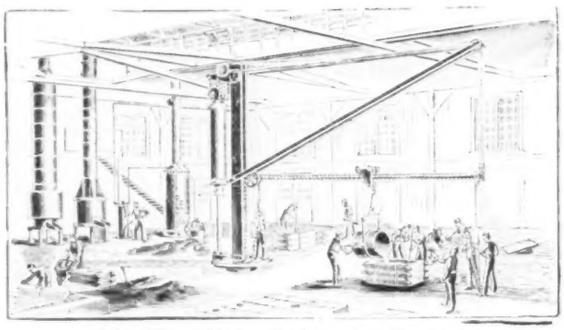

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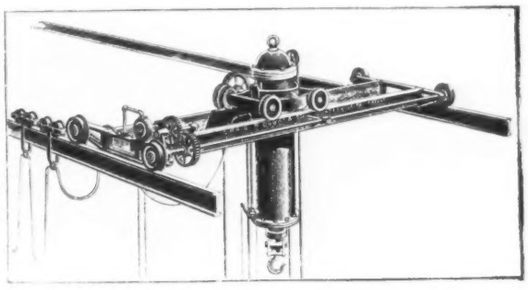

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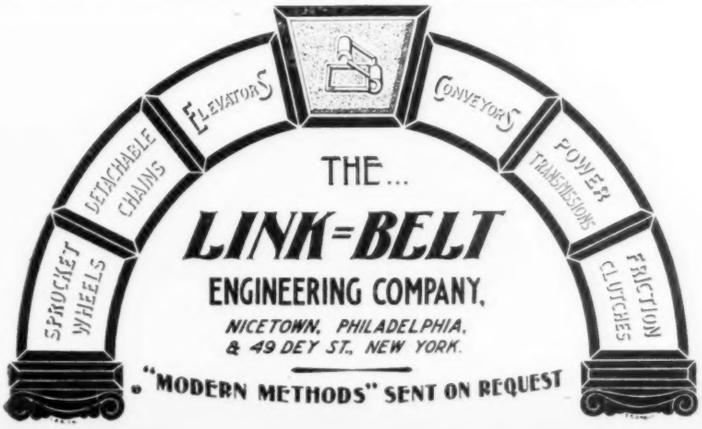

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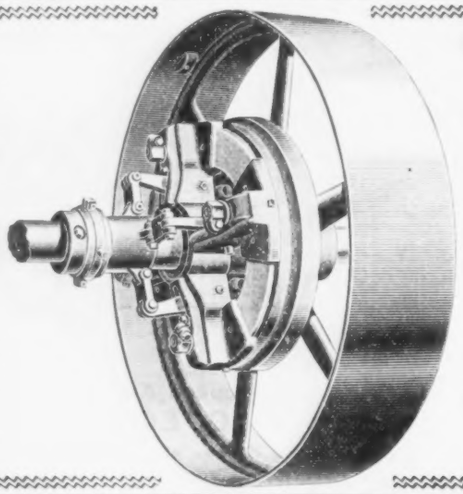

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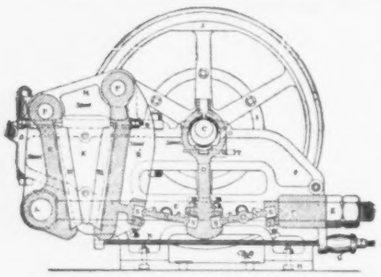

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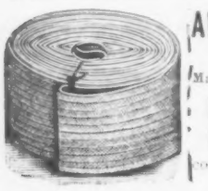

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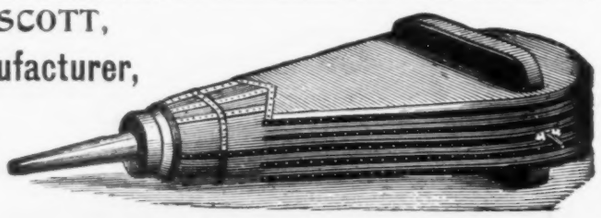

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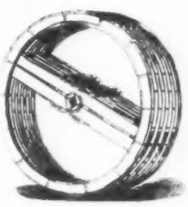

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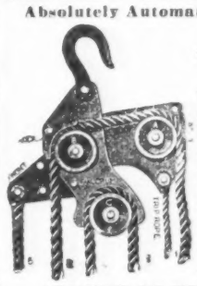

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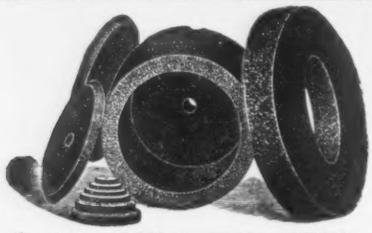

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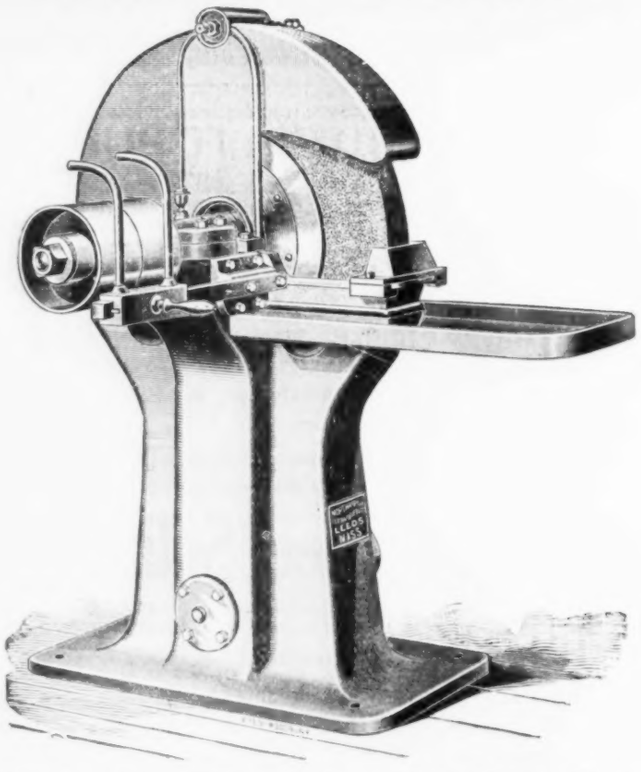

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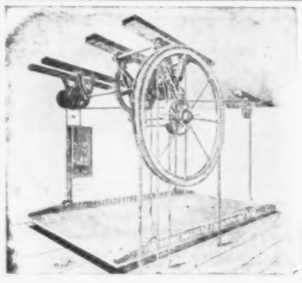

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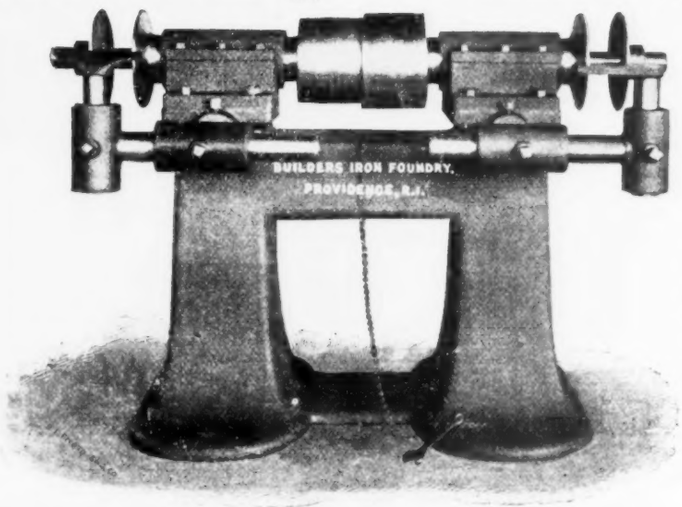

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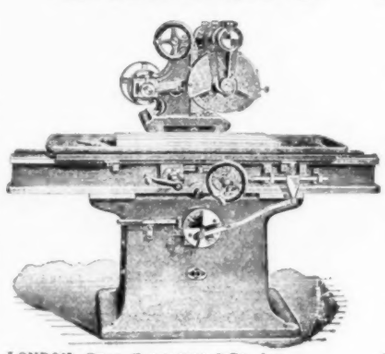

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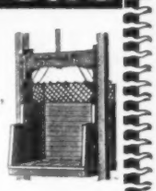

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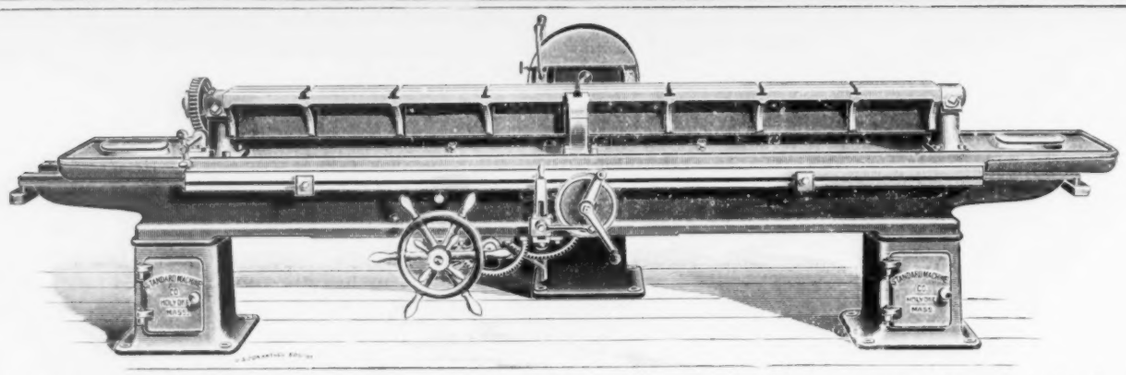

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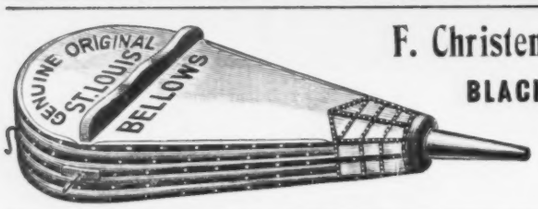

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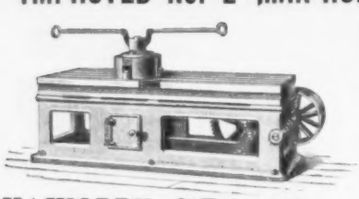

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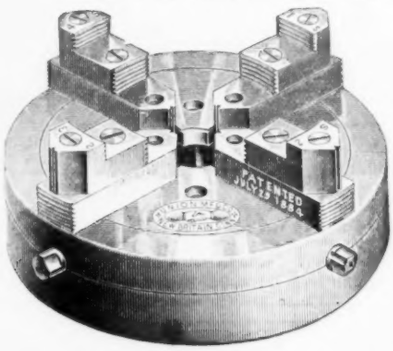

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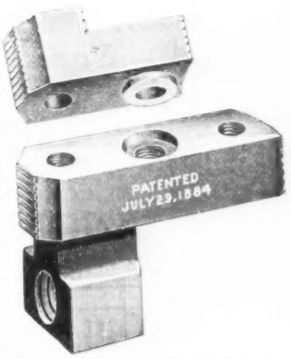

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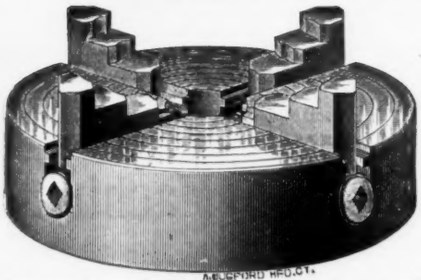

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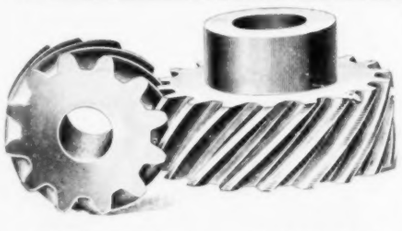

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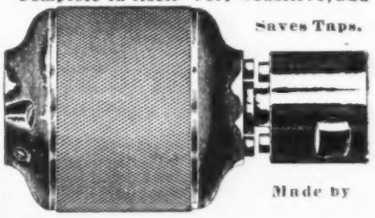

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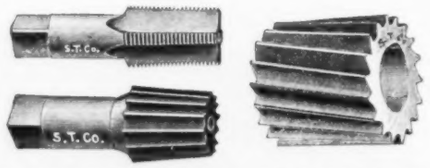

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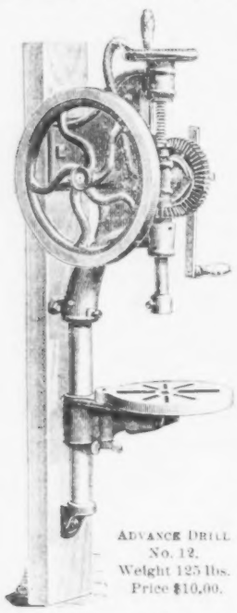

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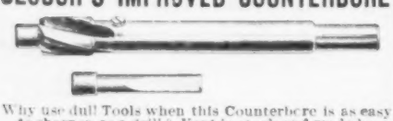

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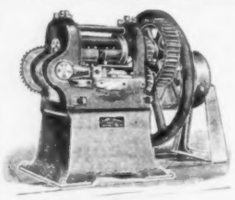

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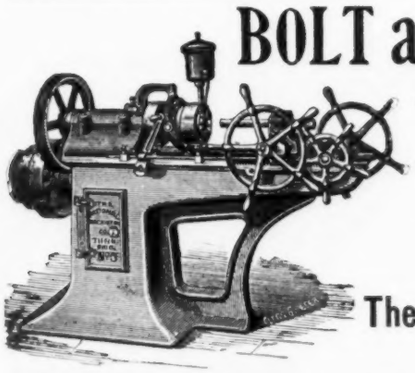

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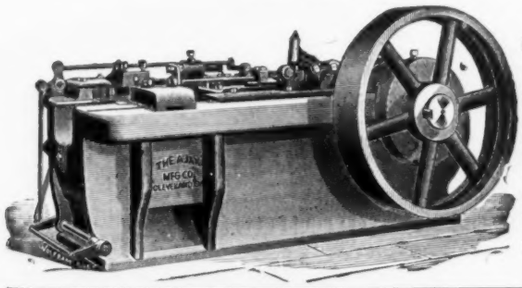

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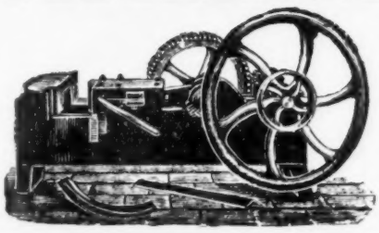

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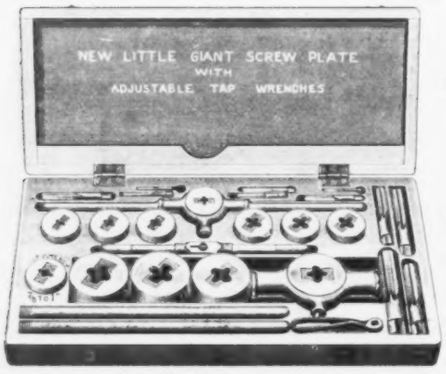

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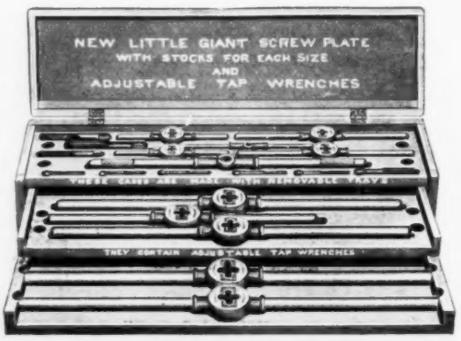

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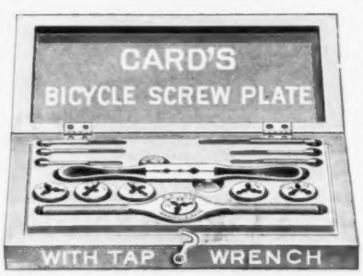

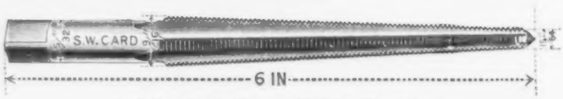

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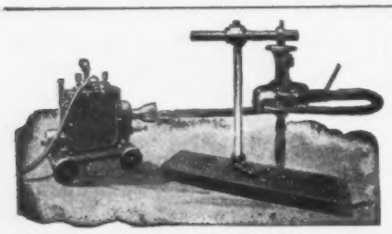

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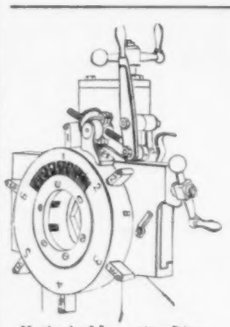

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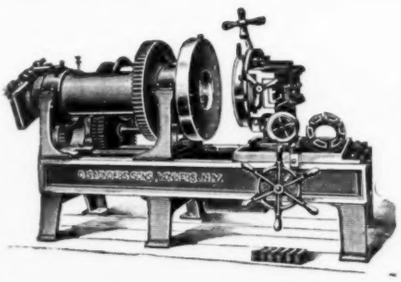

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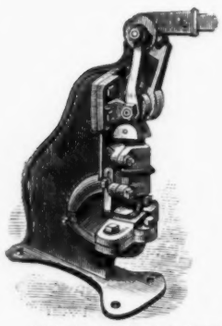

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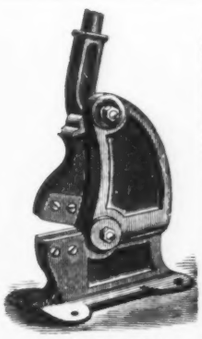

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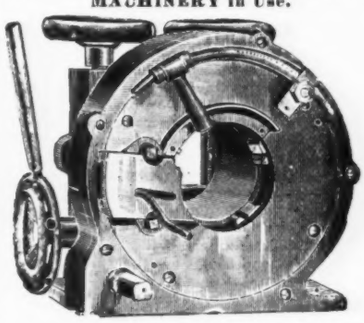

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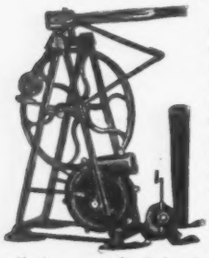

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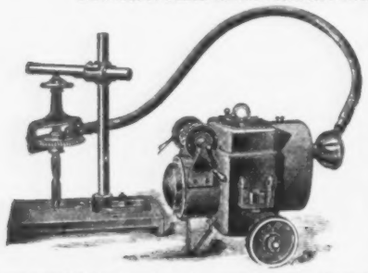

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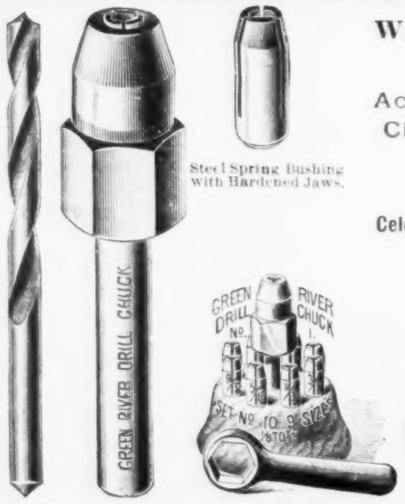

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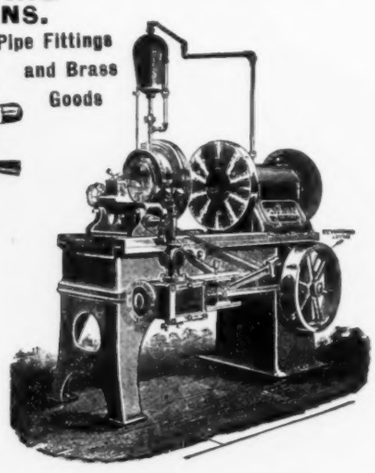

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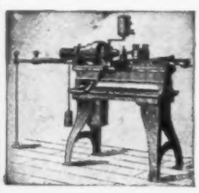

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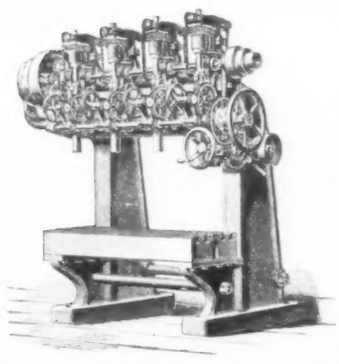

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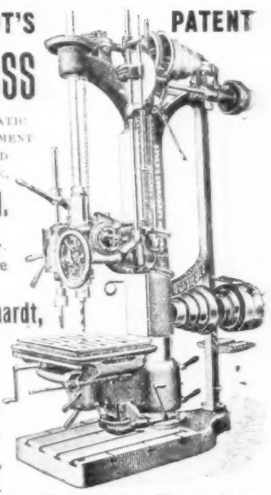

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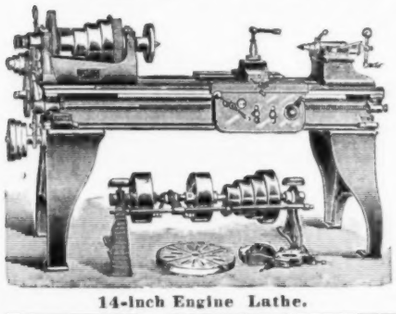

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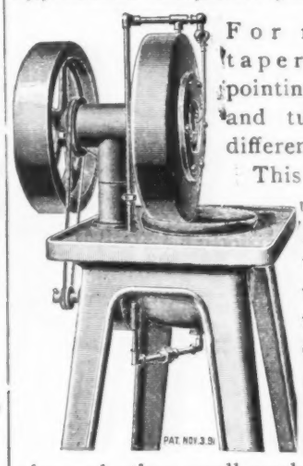

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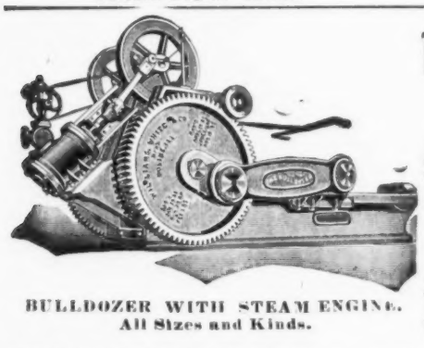

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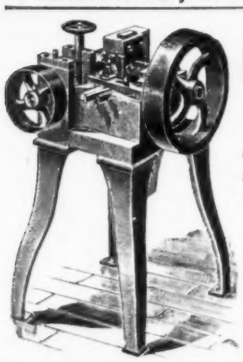

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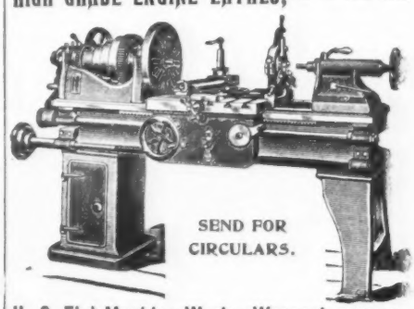

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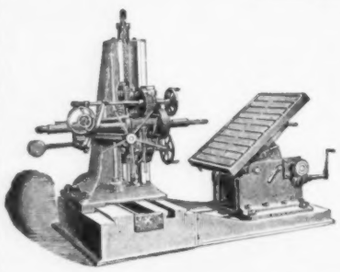

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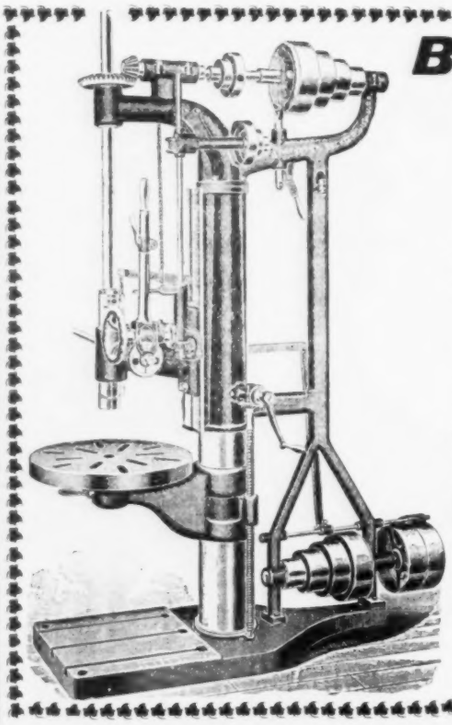

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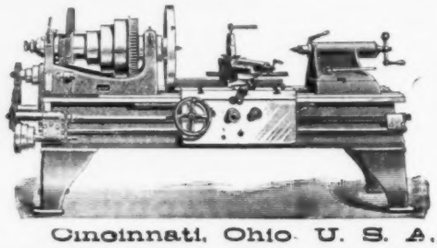

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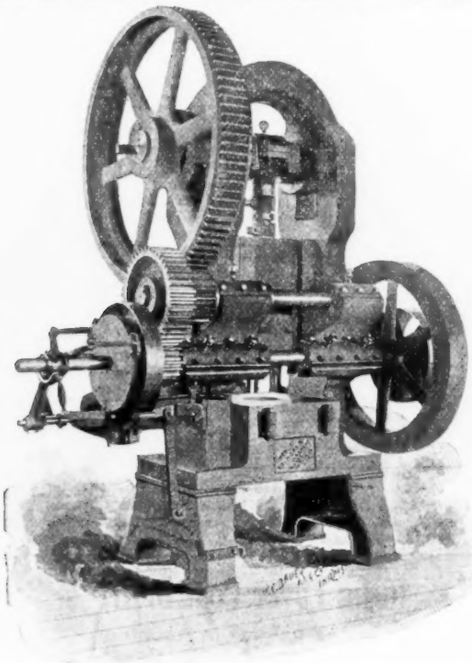

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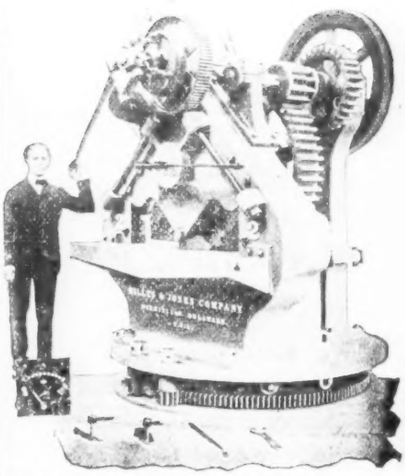

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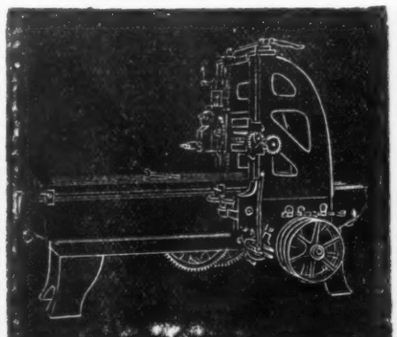

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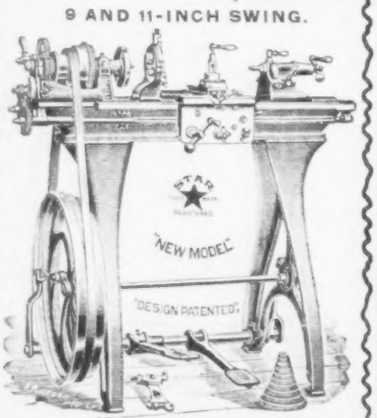

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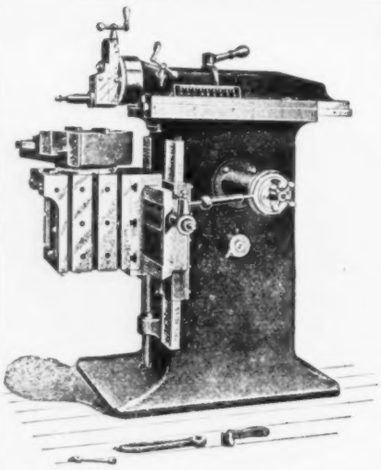
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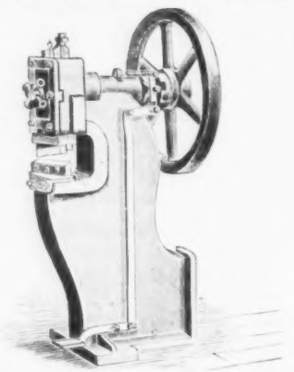

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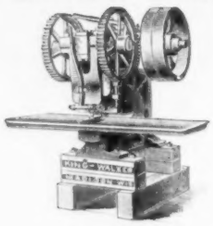

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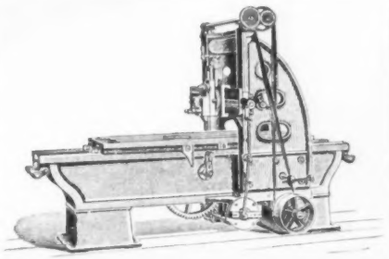

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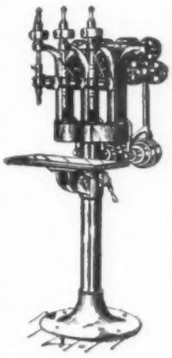

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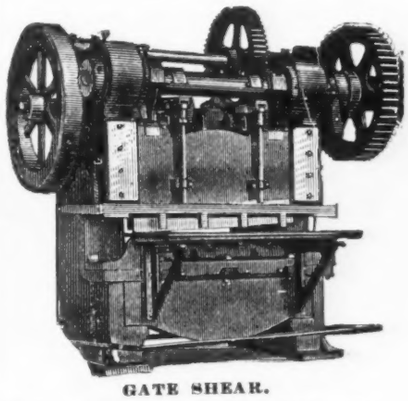

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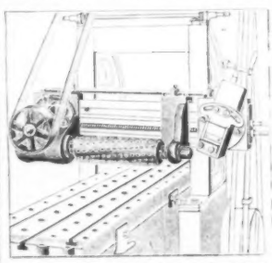

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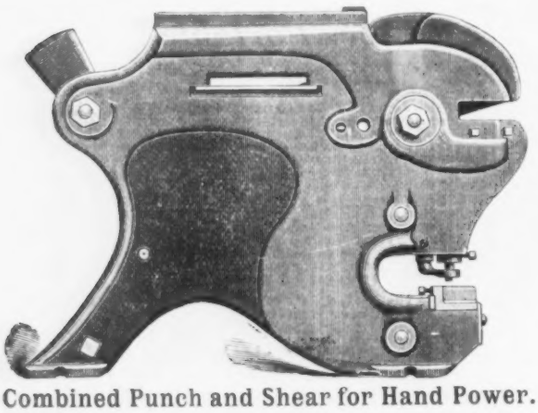

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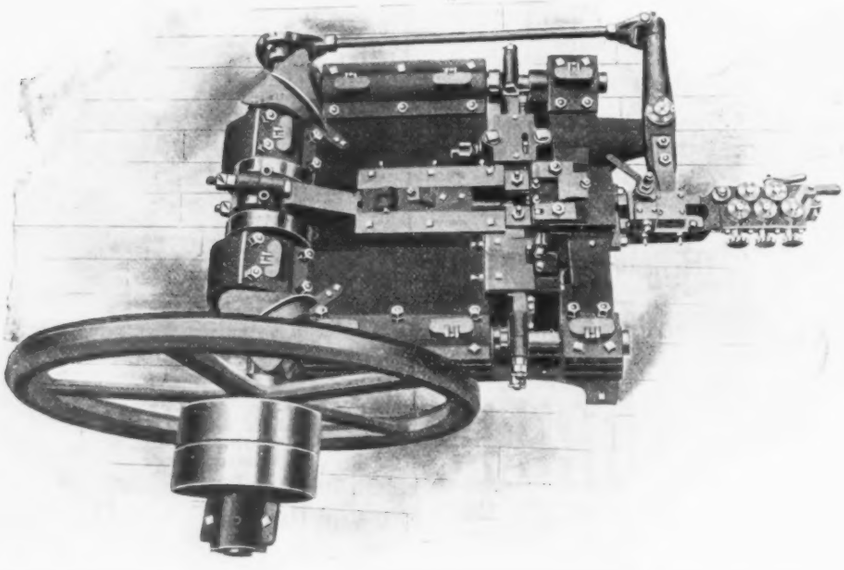

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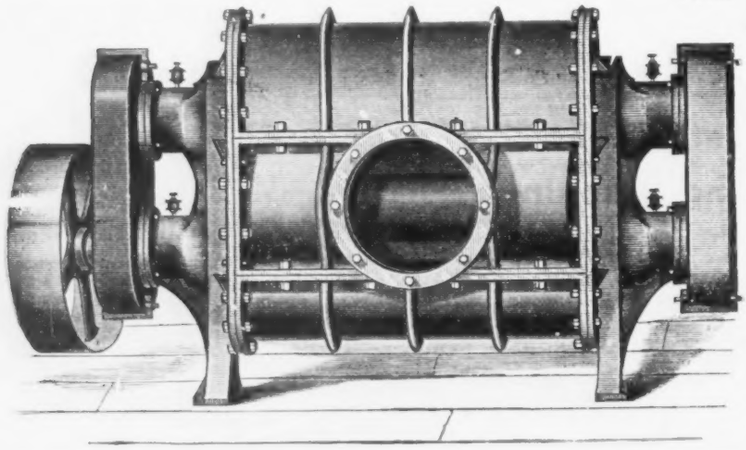

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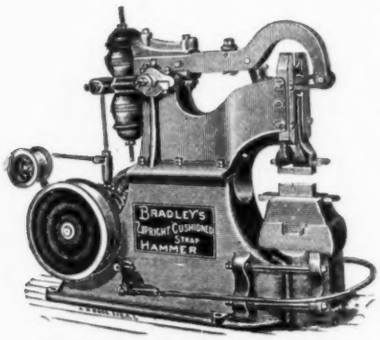

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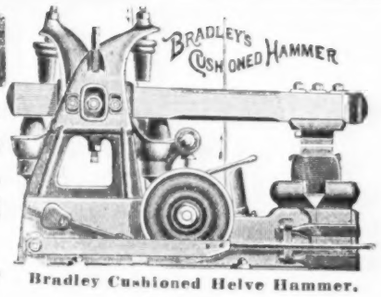

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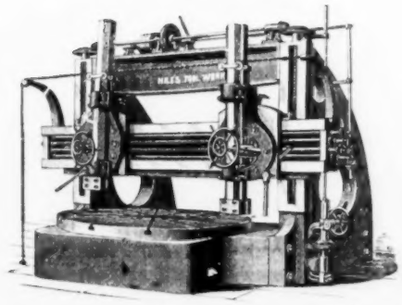

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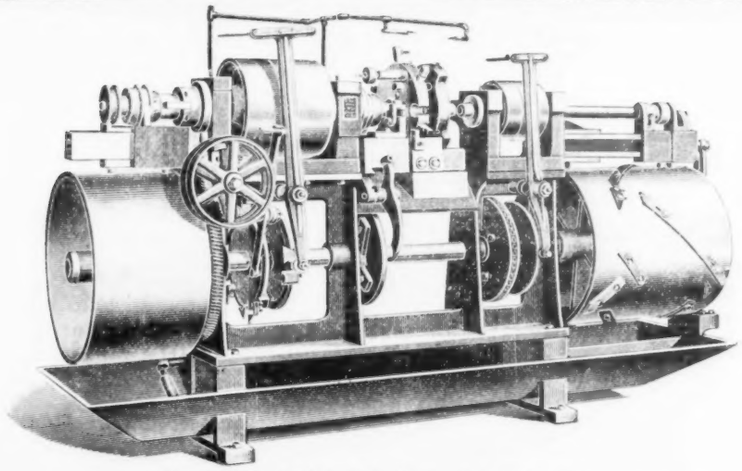
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Spencer Automatic Machine Screw Co.,

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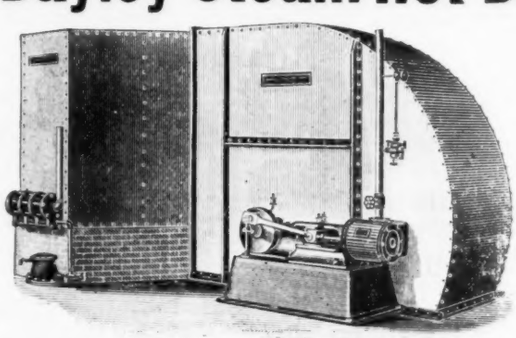

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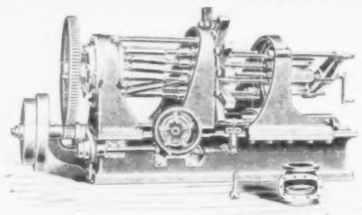

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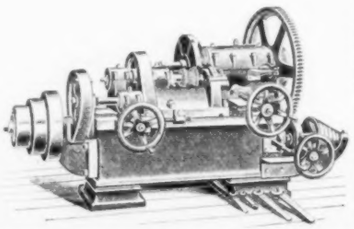

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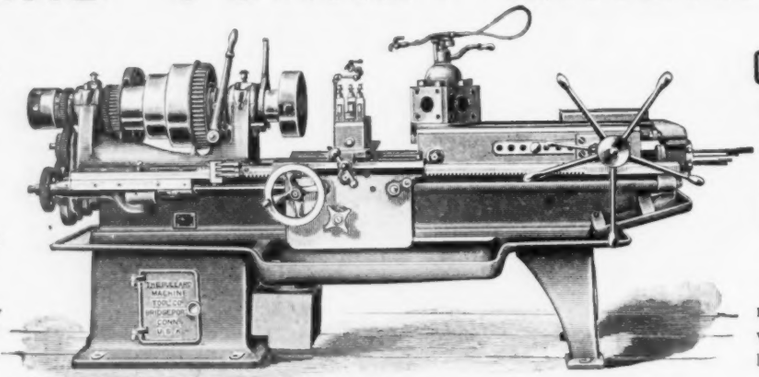

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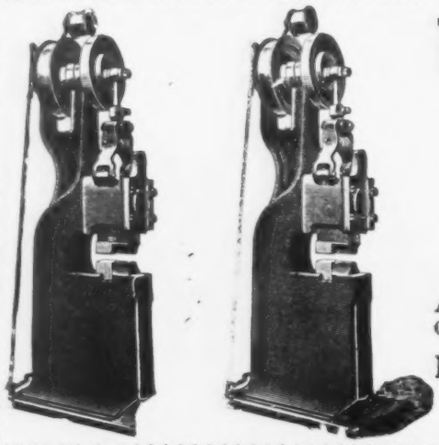

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Power Hammer

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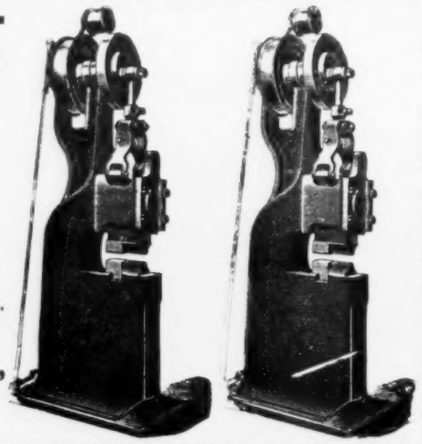

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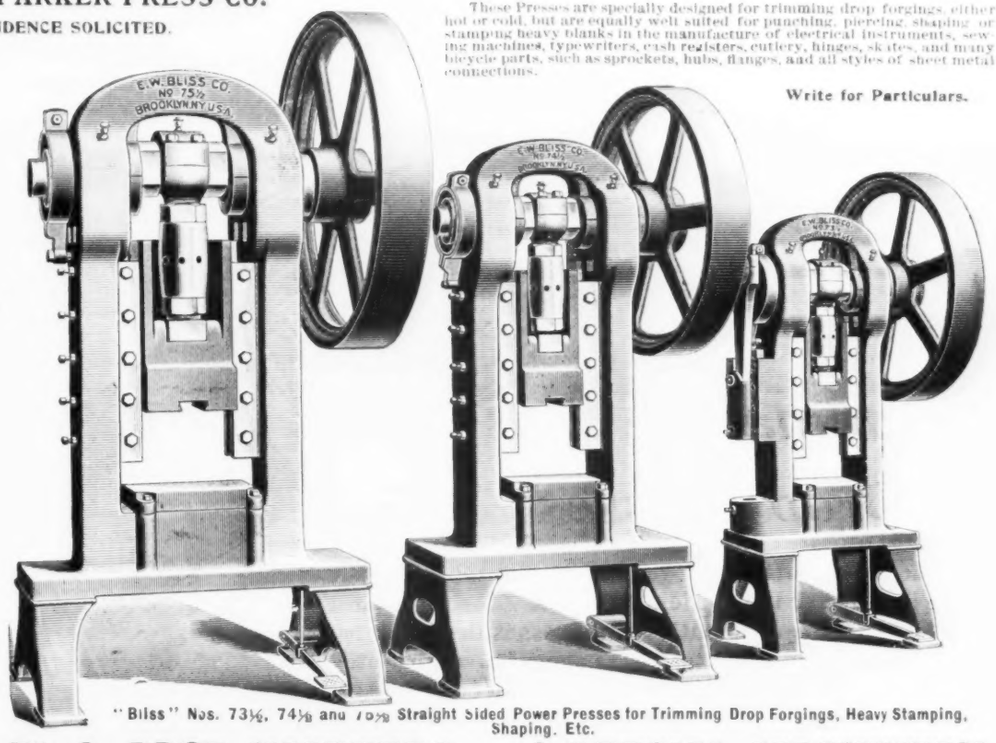

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Our Miller is attaining a world wide reputation for ***Accuracy,*** for being a ***bigger producer*** of good work than any other miller. Has a wide range of feeds, automatic, all levers are conveniently located.

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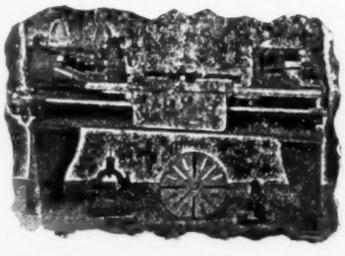
WHY This Lathe is the one for you to buy. WHY



It has easy, quick and accurate adjustments of all feeds.
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Changes for screw cutting are made instantly; no gears to take off or put on.
The dimensions are liberal and in proportion to the service required of them.
The Lathe in general is easy to operate.
The workmanship insures satisfaction.

Sizes, 14 inch to 42 inch Swing. Beds in even lengths.

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6 " " Foot Presses,
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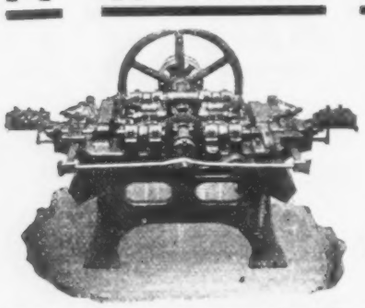
IT WORKS "BOTH CUMIN & A-GOIN."



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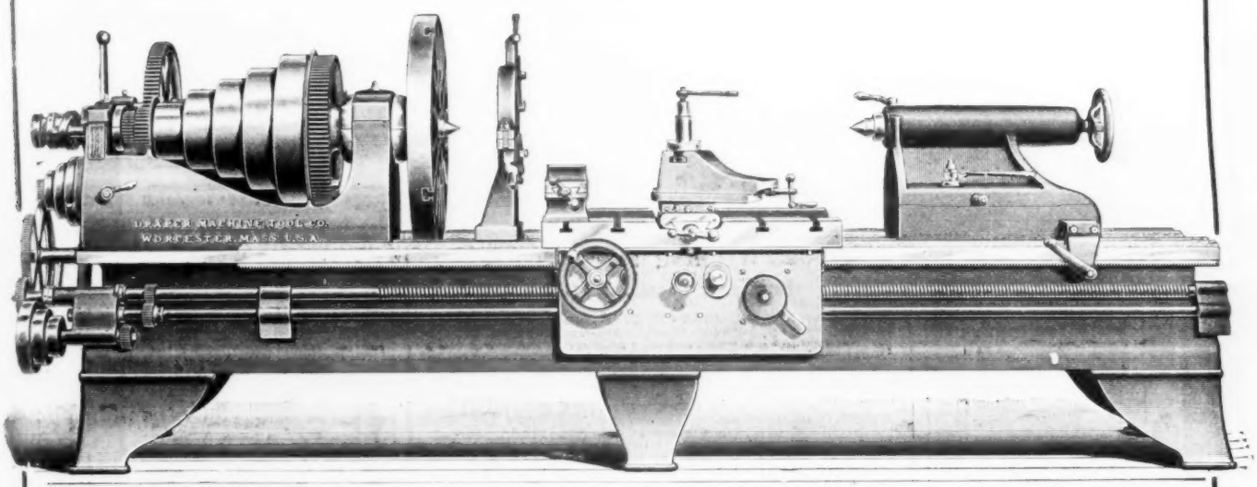
Manufacturer of all Descriptions of

PRESSES.

30 in. X 12 ft. Screw Cutting Lathe.



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SCREW MACHINES. CRANK PLANERS. SCREW CUTTING LATHES
HAND LATHES.

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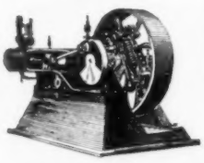

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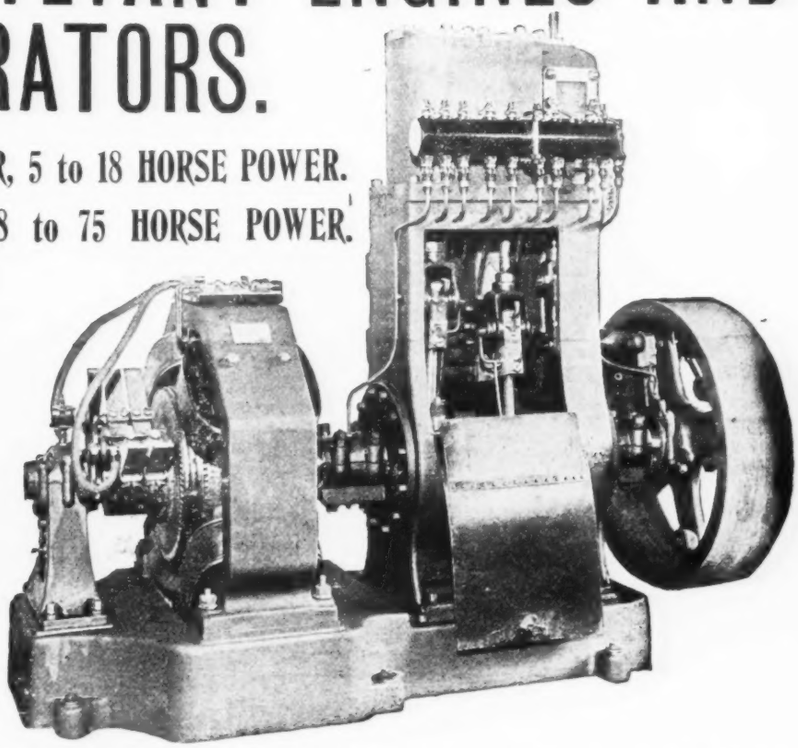

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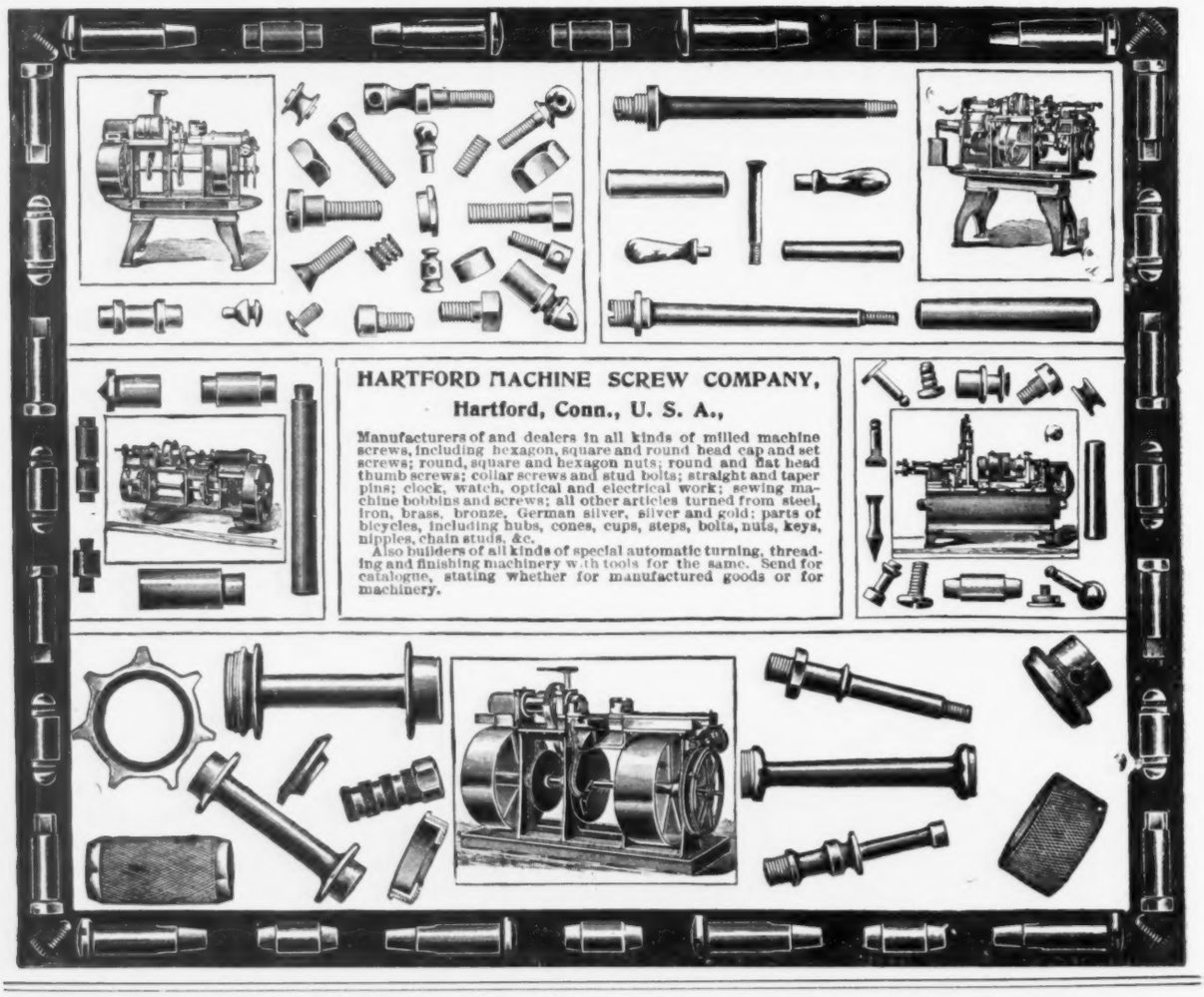

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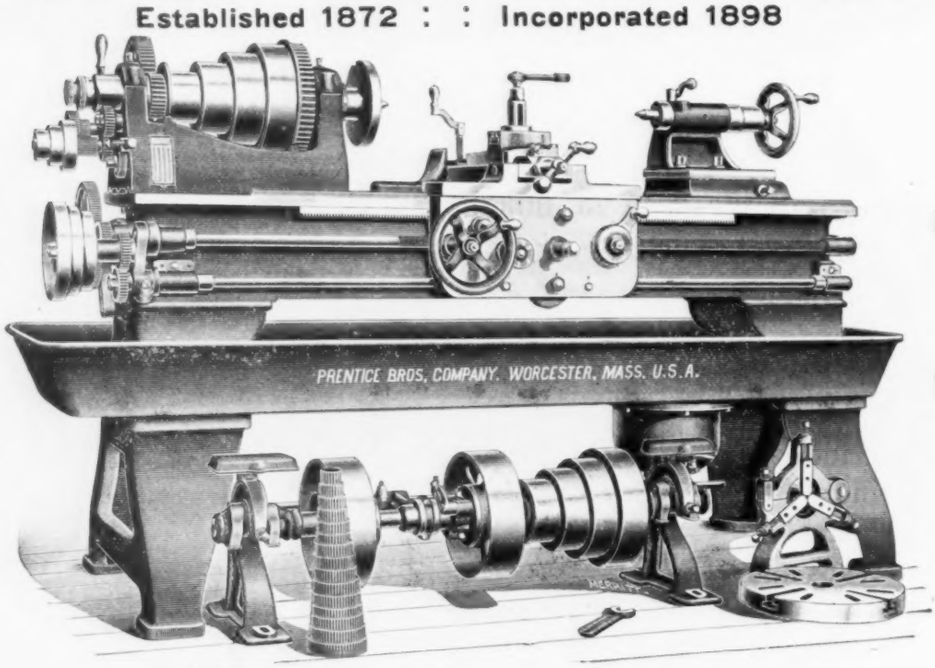

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With or Without

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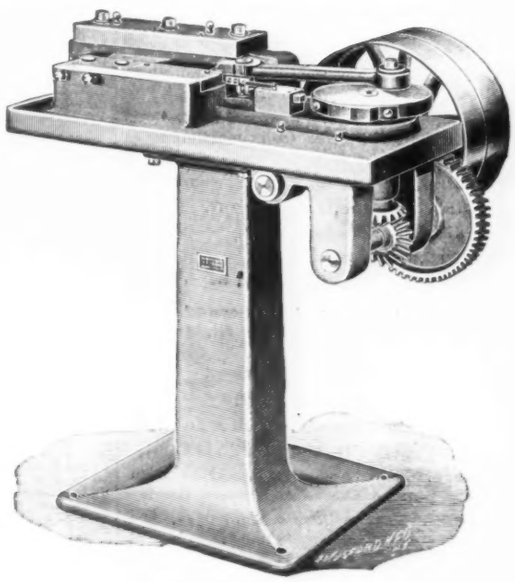

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Shapers, Crank and Geared, 12 to 24 in. stroke, Gould & Eberhardt, Prentiss, Hendey.

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Will plane 48 in. wide, 33 in. high and 8 ft. long. One head on cr ss rail, double belted, feeds in all directions, estimated weight 7500 lbs. Good order and cheap.

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1 250 lb., 1 200 lb. Farrell Drop.

Machinery appraised any part of country.

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- 28 in. B. G. P. F. A. S.
- 32 in. B. G. P. F. A. S.
- 40 in. B. G. P. F. A. S.
- 66 in. Gang Radial, B. G. P. F.
- 1 Henley Swing Drill.
- 14 in. Aurora Sensitive.
- 16 in. Sensitive, Flickinger.

MISCELLANEOUS.
- 16 in. x 6 ft. Fox Monitor.
- 24 in. Pulley Lathe.
- 24 in. Turret Lathe, 4500 pound.
- 26 in. Pulley Lathe.
- 40 in. Horisontal Boring Machine.
- Harrington Suspension Drill No. 3 for plate work.
- 1 Brass Valve Machine.
- Emery Stands for two wheels 1 in. x 2 in.
- Garvin Screw Slotter.
- Hand Forge, Foos Mfg. Co., Scientific No. 3.
- Sellers Twist Drill Grinder.
- Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS
IN
MACHINE TOOLS.
Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe.
22 in. x 12 ft. Flather Engine Lathe.
No. 2 Bardons & Oliver Screw Machine with wire feed.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 Diamond No. 5 Tool Grinder.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear.
Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
1 3-head Slotter for locomotive frames; bed 36 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,

156 Oliver St., Boston, Mass.
12 South Canal St., Chicago, Ill.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.

50 in. Niles Pulley Lathe.
48 in. x 20 ft. Fifield.
48 in. x 20 ft. Sellers.
28 in. x 27 ft. Fifield.
28 in. x 22 ft. Putnam.
27 in. x 10 ft. Davis&Egan
24 in. x 20 ft. Fifield.
18 in. x 10 ft. Bradford.
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.
17 in. x 17 in. x 4 ft. Putnam Planer.
30 in. x 30 in. x 6 ft. Putnam Planer.
Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
1¼ in. x 5 ft. Turret Lathe.
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & K.
16 in. Wolcott Shaper.
No. 4½ B. G. Garvin Miller
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.

Also full line latest improved new machine tools.

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68 and 70 South Canal Street, Chicago.

Second-Hand Tools.

ENGINE LATHES
- 1 13 x 5 Plain Turret Lathe.
- 1 14 x 5 Putnam.
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- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 10 Lodge & Barker.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 20 x 8 Lodge & Barker.
- 1 18 x 10 Sheppard.
- 1 18 x 10 Steptoe McFarlan.
- 1 19 x 7 Lodge & Davis.
- 1 20 x 8 Pond.
- 1 20 x 0 Porter.
- 1 24 x 12 Hatfield.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.
- 1 32 x 32 x 12 Fitchburg.

DRILLS.
- 1 13 in. Sensitive Drill.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 4 ft. Plain Radial Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 12 in. Smith & Mills.
- 1 15 in. Steptoe
- 1 15 in. Betts Traveling Head.
- 1 26 in. Friction.

SCREW MACHS.
- 1 ⅛ Screw Machine.
- 1 1¼ Screw Machine.
- 1 1½ Screw Machine.
- 1 2⅛ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head.
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1¼ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton K'yseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arm.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ¾, 1¼, 1¾ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in. Hand Lathes.
1¼ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. CO.,

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SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. 3, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Flabe Lucop Mill.
Vertical Engines, 6¼ in. x 7 in., 12 in. x 12 in., 16 in x 16 in.
Horisontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is r cut off. Other sizes up to 500 Horse. Seven 100 Horse Boilers good for 90 lbs., $350 each. Numer ous machines not mentioned for want of space

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ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine.
1 500 Light Multi-Polar Dynamo, 550 revolutions

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ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

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FLY WHEELS.

One 11 foot, in halves, 10 tons weight. One 8⅛ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
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Iron Working Tools.

FOR QUICK SALE.

1 Lewis-Oliver Bolt Header, 1 in.
1 Abbe Bolt Header, ¾ in.
1 Double Punch, Bement.
2 Hand Lever Punches.
1 14 in. Alligator Shear.
1 8 in. Alligator Shear.
2 Arch Bar Formers.
2 Iron Benders.
8 Large Forges, with blast pipes.
2 Forge Heating Furnaces.
2 Bolt Heating Furnaces
4 Extra Large Anvils.
Large lot Blacksmiths' Tongs and special tools.
Straightening Plates, Swedge Blocks, &c.

Low prices before removal.

THOMAS P. CONARD,

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FOR SALE.

2 Vertical Boilers, 400 H. P. each, steam 125 lbs.
1 " " 250 " " " 100 "
24 42 x 48 cross Compound Wright Engine.
22 40 x 36 " " " "
2 Tandem compound Wright Engine.
20 40 x 36 Corliss Engine.
1 Double tandem compound Wright Corliss Engine, 1000 H. P.
26 x 60 Corliss Engine.
250 H. P. compound Westinghouse Engine.

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FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & B. Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen'r'g Set.

WICKES BROS., Saginaw, Mich.

READE & BOWLER

OFFER FOR SALE
Complete Outfit of

OPEN HEARTH STEEL PLANT

LOCATED NEAR NEW YORK CITY.

FURNACES,
LADLES,
ENGINES,
BOILERS,
BLOWERS,
MATERIAL

READE & BOWLER,
216-217 American Trust Building,
CLEVELAND,

FOR SALE, CHEAP.

1 24 x 48 Corliss, with 18 ft. Band Wheel, 40 in. face.
1 16 x 42 Corliss, with 7 ft. Band Wheel, 17 in. face, 12 ft. Fly Wheel.
1 54 in. Bement Boring Mill.
1 42 in. Radial Drill.
1 12 in. Bement Slotter.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.
4 13 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

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FOR SALE.

30 x 36 in. Vertical Corliss Rolling Mill Engine with 20 ton wheel, one billet shear with engine attached, one heavy bar shear with engine attached, one No. 22 Carlin Shear. We manufacture grinding pans for steel works, chemists, etc.; boilers, steam pumps, hoisting engines and skull breakers.

THOMAS CARLIN'S SONS,

186 Lacock Street, Allegheny, Pa.

Second-Hand Machinery.

Engine Lathes.
13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines
No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 40 ft., 3 heads.

Shapers.
9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.
24 in. Lead Lap, Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,

136-138 Liberty St., New York City.

MILLING MACHINES.

Second-Hand.

1 No. 1 Cincinnati Universal Miller, power feeds, latest pattern.
3 No. 2 Brown & Sharpe Plain Millers, A1 condition.
3 sets Brown & Sharpe Plain Milling Machine Centers.
5 No. 1 Cincinna'i Plain Milling Machines, good condition.
3 Prentiss Hand Millers.
1 No. 1 Garvin Universal Milling Machine.
3 Garvin Lincoln Pattern Milling Machines.
1 Ames Lincoln Pattern Milling Machine.
1 Pratt & Whitney Cam Milling Machine.
1 Special Rim Milling Machine.
1 Beaman & Smith Duplex Milling Machine, fine condition.
1 Two-spindle Ames Profiler.
1 No. 2 Becker Miller with Rotary Table.
2 No. 5 Becker Vertical Millers with automatic feeds, fine condition.
1 No. 3 Hilles & Jones Vertical Miller, 36 in. table.

Agents for Cincinnati Milling Machine Co.
Agents for Whitney Milling Machines.
Send for January list of new machinery.
Send for January list of second-hand machinery.

Marshall & Huschart Machinery Co.,

Chicago Office, 62-64 So. Canal St.
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BARGAINS.

10 in. Crank Shaper, Gould & Eberhardt.
16 in x 16 x 3 ft. Planer, Pratt & Whitney.
36 in. x 36 in. x 8 ft. Planer, New Haven.
16 in. x 8 ft. Tool Room Lathe, Compound Rest, P. C. Feed and Taper. Good as new. Lodge & Davis.
17 in. x 8 ft. Engine Lathe, Wright & Smith.
20 in. x 12 ft. " " L. W. Pond.
24 in. x 21 ft. " " New Haven.
54 in. x 11 ft. " "
84 in. Radial B.G.& S F'd, Betts Mch.Co.
36 in. x 6 ft. Turret Ch'k'g Lathe, Bullard.
Pond Index Miller.
No. 2 3-spindle Gang Drill, Garvin.
No. 2 Wire Feed Screw Machine. Takes 1" Stock. Good as new. Costilo.
7 No. 18 Bliss Presses. Good order.
7 No. 19 " " " "

Can give bargains in new and second-hand machine tools at all times.

GEO. E. AFFLECK,

109 Liberty St., New York.

A Few Special Bargains in Second-hand Machinery.

8 Higley No. 2 Cold Sawing Machines all complete and in fine order.
Lee & Hunt Cold Saw, with engine attached.
No. 3 Stiles Press, 1⅛ in. stroke.
No 4 Waterbury Press, 1¼ in. stroke.
50 lb. Bradley Strap Hammer, fine order.
600 lb. Bement Steam Hammer.
200 lb. Barrows Steam Hammer.
90 lb. Ferris & Miles Steam Hammer.
60 in. Bement Vert. Boring Mill
48 in. Bickford Vert. Boring Mill.
7 ft. table Newark Horiz. Boring Mach., P. C. F., 3⅞ bar, table facing attachment complete and has power lift. Can also be used as a milling machine.
33 in. Car Wheel Borer.
11 in. Putnam Slotter.
13 in. " "
¼ in. Adt Style "B" Riveting Mach. with c'shaft
Adt Wire Straightening and Cutting-off machine.
8 ft. Betts Bending Rolls
50 in. Williams & Rich Gear Cutter.
48 in. Hughes & Phillips Gear Cutter.
2-spindle Whiton Centering Machine.
2 spindle P & W. " "
2 2-spindle Brown " "
2 in. Bement Bolt Cutter.
1¼ in. Merriman Bolt Cutter, auto. opening.
No. 1 Diamond Univ. Grinder.
Cinti. Cutter and Reamer Grinder.
16 ft. Hilles & Jones Plate Planer.
3 H. P. Westinghouse Motor, new.
50 new Standard Grinders, various sizes.

Also a large assorted stock of both new and second hand Lathes, Planers, Drills, Milling Machines, Shapers, Screw Machines and other tools in stock for quick delivery. Send for complete lists.

Write us for anything you need.

PRENTISS TOOL & SUPPLY CO.,
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115 Liberty Street, New York City.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
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Lathes For Sale.

A variety of second hand lathes, including machinist and speed lathes, both heavy and light, at very low prices.

American Soda Fountain Co,
278-288 Congress Street,
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Apply to MR. RICHARDSON, Supt.

FOR SALE!!
SECOND-HAND
MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

HILL, CLARKE & CO.,
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NEW and SECOND-HAND MACHINERY
Bought and Sold.
IRON TANKS FOR SALE. All Sizes.
WM. ECKBOLDS' SONS,
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2D-HAND BERRYMAN HEATERS, all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

SECOND-HAND
Metal-Working Machinery
At Bargain Prices.

Lathes.

One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.
9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Philips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ⅝ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
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Branches at Chicago and Pittsburg.

LOCOMOTIVES FOR SALE.
One Porter Narrow Gauge 36 in. Locomotive with tender, complete, only $450. Wt. 20,000 lbs., size 8 in. cylinder x 14 in. stroke, 4 Drivers, Boiler guaranteed for 110 lbs. Engine first-class.
One Wyoming Valley 36 in. gauge Locomotive and Tender complete, at $650. Wt. 20,000 lbs., size 8 in. cyl. x 14 in. stroke. Boiler guaranteed good for 110 lbs. Engine ready to run.
One 42 in. gauge Locomotive, saddle tank, cyl. 7 in. x 12 in., 4 Drivers. Also 9 Iron Coal Dump Cars 42 in. gauge, good as new.
SCHULTZ & CO., 14 S. Broad St., Phila.

FOR SALE.
Second-Hand Machinery.

1 54 in. x 22 ft. Pond Engine Lathe, triple back geared.
1 32 in. x 14 ft. Wright Engine Lathe.
1 30 in. x 14 ft. Fifield Engine Lathe.
1 24 in. x 16 ft. Fish Engine Lathe.
1 24 in. x 12 ft. Lodge & Davis Engine Lathe.
1 54 in. x 54 in. x 20 ft. Hercules Planer.
1 36 in. x 36 in. x 9 ft. Pond Planer.
1 No. 4 Cincinnati Universal Miller.
1 No. 2 Brown & Sharpe Universal Grinder.
1 No. 7 Crosby Double Action Press.

Also numerous other smaller tools, shafting pulleys, hangers and belting, all in fine condition.

Write for complete list.

McDOWELL, STOCKER & CO.,
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BARGAINS IN MACHINE SHOP EQUIPMENT.
Rare opportunity for concerns equipping new plants or adding to present facilities to secure Shafting, Hangers, etc., Standard Small Tools in great variety, Special Bicycle Machinery and Tools, General line of equipment and Supplies used in bicycle factory. All in first-class condition. Send for catalogue. Something in the lot sure to be of interest. Owners retiring from business. Address
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FOR SALE.
Two Marine Engines and a 35 horse-power Upright Boiler made by Skinner & Arnold Co., Albany, N. Y., but little used. Will be sold at a bargain. Apply to
SECOND NATIONAL BANK,
Cooperstown, N. Y.

FOR SALE.

One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes.
31 x 108 in. Plate Mill, Roughing Rolls, 28 x 84 in., live tables.
1 110 in. Plate Shear.
Pair 36 x 40 in. Horizontal Reversing Engines.
1 18 in. Bar Mill.
2 10 in. 3-high Bar Mills.
Engines, Shears, Roll Lathes, 20 Boilers.
Blowers.
One 10 ton Locomotive Crane.
One 2 ton Locomotive Crane. Both standard gauge.
Supply and Hydraulic Pumps.
Large lot of other machinery such as used in a large steel works.

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For Sale.

Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
Florence, Mass.

60-TON PORTABLE,
HYDRAULIC PRESS,
for Pressing on Cranks, Crank Pins, Sheaves, Car Wheels, etc. Labor-saving. Only $150.00.
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Established jobbing and retail hardware business in good business town of Northern Ohio. Best of reasons for selling. A fine opportunity for some one. Address
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WANTED.
SHEARS
Suitable to cut 4 in. Steel Billets cold.
MERRILL BROS., Brooklyn, N. Y.

Second-hand Tools.

U. Baird Machinery Co.

323-325 Water St., 392-394 First Ave.,

PITTSBURGH, PA., U. S. A.

36 in. x 28 ft. Betts Engine Lathe
36 in. x 14 ft. New Haven " "
24 in. x 12 ft. " " " " Old style.
24 in. x 8 ft. Phillips " "
16 20 x 5 ft. Bullard " "
16 in. x 5 ft. " " "
10 in. x 4 ft. Prentice " "
21 in. x 7 ft. Lodge-Davis Turret Lathe.
15 in. x 5 ft. A. T. & M. Co. Fox Lathe.
30 x 30 x 7 ft. New Haven Planer.
26 x 26 x 9 ft. " " "
24 x 24 x 6 ft. " " "
4 ft. Wall Drill.
36 in. Gould & Eberhardt Gear Cutter.
48 in. Pulley Borer.
19 in. Putnam Slotter.
No. 7 Sturtevant Monogram Blower.
Two No. 8 Sturtevant Monogram Blowers.
45 in. Buffalo Pressure Blower.
100 lb. Merrill Bros. Air Cushioned Hammer.
15 in. Hendey Shaper.
24 in. " "
10 in. Allen Air Compressor and Tank.
2-Spindle Profiler.

And a Large Stock of New Tools.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower, No. 5. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

NAIL MACHINES
For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

FOR SALE.

A General Hardware Business, established in 1874, has always done a profitable and safe business, located in the largest town in the county and in one of the best farming districts in Michigan. Will sell or rent store; wish to retire from active business. Stock will inventory about $4,500.00. Address

L. B. YOUNG,
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For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

HERO STAMPING WORKS,
Room 407, Cuyahoga Bldg., Cleveland, O.

RADIAL DRILL
For Sale Very Cheap.

Has a column 13 inches diameter by 13 feet high and drills a hole in the center of a 13 feet circle. Is a modern tool, universal type, and as good as new.

Address
JUAN G. RIBON,
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See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 795, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

Metals Wanted.

We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

MARKLE LEAD WORKS,
St. Louis, Mo.

FOR SALE
AT A BARGAIN.

The Machinery of the RIPPEL FOUNDRY, as follows:

Two cupolas, one twenty ton traveling crane, two swinging or hand cranes, two core ovens and cars, one Root blower and about eighty feet of pipe, two lathes, one planer, one bolt cutter, one drill press, two emery wheels and frames, one electric dynamo and fixtures, one polisher, one each five, ten and twenty ton ladles and shanks, a number of large flasks, including all the tools, patterns and moulds. This machinery, tools, etc., are all in good condition, having been used less than two years. This outfit is for sale cheap, as the buildings will be used for other purposes.

JOHNSON & CO.
Mt. Gilead, Ohio.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
office of *The Iron Age*, 59 Dearborn St., Chicago.

We Have For Sale

2 150 h. p. Babcock Wilcox Boilers, with first joint connections.
1 18 h. p. Gasoline Engine.

ALL IN FIRST CLASS CONDITION.

FRANK SAMUEL,
Harrison Building, 15th and Market Sts.,
Philadelphia.

ENGINE.

Vertical, 16 in. x 18 in. cylinder, in first-class order, complete. Price, $475 00.

BOILER.

Shell, 56 in. dia., 34 Tubes, 5 in. x 15½ ft. Price, $150.00.

Further information desired on application to

JAMES LEFFEL & CO.,
Springfield, Ohio.

FOR SALE.

Two 28 by 60 Corliss Engines

One Right Hand, One Left Hand.
2nd Hand—good order.

Address, J. A. VAIL,
Security Bldg., St. Louis, Mo.

FOR SALE.

The best Hardware opening in Eastern Illinois. Stock about $4000. Address

"FACTS,"
office of *The Iron Age*, 232-238 William St., N. Y.

PITTSBURGH
SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

No. 8 Wood St.,
Pittsburgh, Pa.

We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

Locations for Industries.

The Chicago, Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y,
Old Colony Building, Chicago, Ill.

WANTED.

A man with good executive ability with about $10,000 to take an interest in an old established machinery business which has a large export trade. One preferred who understands mechanical drawings; to such, this is a grand opening. Our references are among the best machinery houses of this country and England. Answer with reference to

"C. M. S., 112,"
office of *The Iron Age*, 232-238 William St., N.Y.

PERMANENT EXHIBITION

OF MANUFACTURES FOR

EXPORT,

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NEW YORK. BOWLING GREEN BLDG.

We are in connection with foreign buyers. For further information and details, write to the

INTERNATIONAL LAND
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New York City.

EUGENE V. N. BISSELL, Auctioneer.

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Successors to
HAYDOCK & BISSELL
WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

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FITCHBURG MACHINE WORKS.
P. BLAISDELL & CO.
BRADFORD MILL CO.
BICKFORD DRILL & TOOL CO.
CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second Hand Machinery.

JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia.

Jan. 6, 1899.

Two Electric Lighting Companies in the City of Beloit, Wis., having been consolidated and converted into a Water Power Plant, the following list of machinery has been thrown out of use and is for sale. None of it is over four years old, some of it used but little and the best of it, such as the Engines are as good as new. It will be disposed of cheaply to quick buyers for cash. Inspection and correspondence solicited:

1 60 H. P. Hor. Engine, 8 in. x 14 in. cylinder. Manufactured by John T. Noye Mfg. Co., Buffalo.
1 175 H. P. Bates Corliss 16 in. x 42 in. cylinder.
1 220 H. P. Williams Engine, 18½ in. x 30 in. cylinder.
1 160 H. P. Corliss Engine, 14 in. x 32 in. Manufactured by Hoffman & Billings Mfg. Co.
1 Brownell full front Boiler, 58 in. x 14 ft., pattern No. 70.
1 Root full front Boiler, 70 H. P.
1 Excelsior Iron Works Boiler, 5 ft. 3 in. x 12 ft., full front.
1 Taplin Rice & Co. Boiler, 5 ft. 6 in. x 15 ft., full front, Pumps, Injectors, Governors, Shafting, Floor Stand, Pulleys, Belt Tighteners, Belting, etc., etc. Apply to the

BELOIT ELECTRIC CO.,
BELOIT, WISCONSIN.

FOR SALE.

Manufacturing Plant, manufacturing specialties of Agricultural Implements, with three acres of ground, completely equipped with first-class tools and machinery, together with steam heat and electric lights; employing at present between 50 and 60 men. The plant is in full operation and has been for the past seven years. The demand for the goods always exceeding the capacity, earning fully 20% on the investment. Must be sold within the next 90 days. Plant, tools, machinery and stock on hand would invoice at about $50,000 and will be sold for 50% of this amount.

The factory is located in one of the best manufacturing centers in the Northwest, in a city of 20,000 inhabitants, on the Mississippi River, and with shipping facilities over five different lines of railroad, with two side tracks running to the plant. Everything first-class; the best opening for a small investment in manufacturing in the United States. Best of reasons for selling.

Parties interested, address
"Z-4,"
office of *The Iron Age*, 232-238 William St., N. Y.

FOR SALE.

About 1,500,000 lbs. Steel Plates,
from ¼ in. to 1½ in. 4 ft. x 22 ft. Very best material, low phosphorous.

500,000 lbs. Iron Tank Plates
⅛ in. thick, 2 ft. 6 in. x 7 ft.

About 120,000 lbs Steel Bars
4 in. to 8 in. x ½ in.

Large lot Angles and Channels, 3 Stacks, 40 ft. x 36 in. x 3-8 in.

The above material is all new, coated with one coating of paint, and was in use in the lately demolished Gas Holder of the Consolidated Gas Co., 21st Street and Ave. A, New York, where it may be inspected.

Also 1 50-ton hoist,
with Engine and Blocks complete. Correspondence solicited.

H. A. HITNER'S SON,
Gane & Sergeant Sts., Philadelphia.

DUBUQUE
THE
Manufacturing Center
OF IOWA.

Trade in many lines of manufactured goods is now and will be for years to come, most active throughout the West. For this reason, responsible manufacturers looking for new locations will be interested to know, that Dubuque, located on the Mississippi River, **THE LARGEST COMMERCIAL AND INDUSTRIAL CITY IN THE STATE**, and only second in population, with cheap fuel, cheap lumber, cheap living and excellent railroad facilities; has exceptional manufacturing advantages.

For detailed information, address **C. H. DAY, Secretary Dubuque Business Men's League, Dubuque, Iowa.**

Rare Opportunity.

Owing to the continued ill health of the partner in charge, we offer our well selected stock of hardware, stoves, implements, plumbers' and tinners' stock for sale. Twenty six years in one location. Modern store rooms, ample warehouse facilities. Buildings will be sold or rented to suit purchaser. Situated in a rich agricultural section on line of Lehigh Valley R. R. Address

SMITH & STRONG,
Wyalusing, Bradford County, Pa.

BEMENT BORING MILL.

1 54 in. Bement Boring and Turning Mill.
1 12 in. Bement Slotter.
1 5 ft. Full Universal Radial Drill.
1 Gisholt Tool Grinder.
1 12 in. Turret Lathe.
1 16 in. x 6 ft. Ames Lathe.
1 Heavy Grinder.

All good as new.

J. W. WRIGHT & CO., St. Louis, Mo.

MICHIGAN COLLEGE OF MINES.

Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address

DR. M. E. WADSWORTH, President,
Houghton, Michigan.

SCRATCH CLOTH

for cleaning files and other tools.

WIRE CABLE

in job lots, at very low prices.

WALSH'S SONS & CO.
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.

Telephone Call, 897 18th St.

Morton B. Smith,

243 FRONT ST., NEW YORK,

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL
In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 54 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first-class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

WM. H. PERRY CO.,
Providence, R. I.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited.
C. BOTJER, 405 Newark St., Hoboken, N. J.

FOR SALE OR TO LET.

Drop Forge Works, building 40 x 130 ft., all fitted up with modern tools. 3 Drops. 3 Power Presses. Machine Shop. Japanning Plant. Shears. Brick Boiler House. 2 Steel 40 horse-power Boilers. 1 50 horse-power Engine. Complete Oil-Fuel Plant. Side track in yard, no shifting charges. For information address

F. A. FISHER, Gloucester, Mass.

FOR SALE.

We offer for sale the following plants, with all real estate, buildings, machinery, fixtures and tools complete, or we will dismantle same to suit buyers:

Danville Rolling Mills and Nail Works, Danville, Pa.
Cofrode & Saylor Bridge Works, Pottstown, Pa.
Rolling Mills A and B, Catasaqua, Pa.
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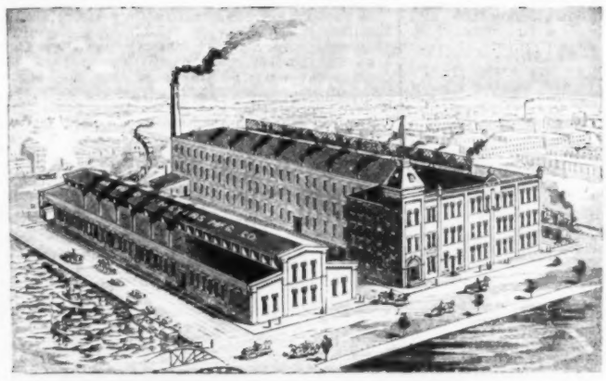
Irondale Furnace, Independence, W. Va.

These plants contain over 7,000 tons of machinery and equipment of every description.

C. R. BAIRD & CO.

Pig Iron,
Philadelphia, Pa.



★ THIS BUILDING

92 x 225 feet FOR SALE, LEASE or RENT, cheap. Formerly used as Arch. Iron Dept. of our business. Is splendidly adapted for Foundry, Machine Shop or any manufacturing enterprise; fitted with overhead crane, two lines of shafting, railroad track to door, well lighted. Ample power can be had. A splendid location and opportunity for any manufacturer. Address

THE FRED. J. MEYERS MFG. CO.,

(37 Minutes from Cincinnati, O.) **HAMILTON, O.**

FOR SALE.

Old Iron Tee Rail.

700 TON, 55 LBS. TO YARD, 3½ IN. HIGH.

Best New England Makes

Extra good lot for rolling into small shapes or cutting up for building stock. A lot of them good enough for relaying

JAMES S. STEWART & CO.,

240 A Street, So. Boston, Mass.

FOR SALE.

At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c. to J Stewart Walker, Court's Agt., Lynchburg, Va.

FOR SALE.

9-in. Mill, complete, with Engine 18 x 36, driven by belt; all necessary pulleys, heavy fly wheel on engine, and also one on train; whole sets of rolls for 4¼, 3⅜, 2¾, 2¼ and 1¾ skelp; also a lot of merchant iron rolls; also one Robinson-Rea squeezer, new, never erected, will take 250 lb. ball.

Address

HARRISBURG ROLLING MILL CO.,

HARRISBURG, PA.

TO MANUFACTURERS.

Are you represented in Philadelphia, and vicinity? If not, why not? We have large store on prominent street. A1 business rating, many years' experience, and unlimited facilities for marketing goods. We are open for propositions from reliable manufacturers and importers.

P. O. Box 42, PHILADELPHIA, PA.

FOR SALE OR LEASE.

Manufacturing Plant, Bank Street, Cincinnati. Specially constructed of brick. 150 ft. x 100 ft. Four stories. High ceilings. Light on all sides. Boiler, Murphy Furnace, Engine, Shafting, Heating. All complete.

Apply to

The F. H. LAWSON COMPANY or
THOMAS MORRISON & CO.,
Cincinnati, O.

EXPORT AGENCY.

An Iron Merchant with large established business in the North of England, and having a practical knowledge of the trade, wishes to represent American Manufacturers of Pig Iron and Rolled Steel of all kinds in Great Britain Address first letter to "30/63," care *Ironmonger*, 42 Cannon St., London, England

TO LEASE.

Wareroom, office and basement, 15 Platt St., fitted with rack and bins, specially adapted for iron and steel or metal business. Apply to

CARPENTER STEEL COMPANY,

1 Broadway, New York.

Influential English Firm is open to represent American Firms. Sole Agency. Specialties: Pig Iron and Machinery. Address T. M. B., care Machinery Agency, 100 Houndsditch, London. Quote present prices for Pig Iron suitable for Machine Tools, also other qualities.

FOR SALE.

An old estsblished Hardware Business, the best stand in New England. For particulars inquire of

BALDWIN, ROBBINS & CO.,
115 Milk St., Boston, Mass.

FOR SALE CHEAP.

Blowing engine suitable for blast furnace. Size of steam cylinder 24 x 36; size of blowing tub 78 in. Built by well known maker; in use but 12 months. Guarantee condition almost equal to new. Will sell at a low price if sold at once. Address "ENGINE," office of *The Iron Age*, 232 William Street, N. Y. City.

FACTORY TO LET—ELIZABETHPORT.

Size 150 x 50, extra well built, fifty-two (52) windows engine, city gas, water, etc. Rail and water facilities. Twelve city lots go with factory.

Address CAPT COOTE.
Elizabethport, N. J.

WANTED.

One 60 in. x 60 in. x 12 ft. Planer, fitted with two heads on cross rail, side heads on both housings. The latter to have power feeds. Arrange the side heads to cut from 5 to 4 ft. Cross rail to be operated by power. Planer to have improved reversing gear with a return of about 80 ft per minute.

One 48 x 48 x 12 ft. planer fitted as above described. Propositions will be considered on new or second hand planers within the range of above sizes.

Address, "PLANER," 58 Central Avenue,
Cincinnati, Ohio.

Speaking

about our coke a few weeks ago, we stated that in structure it was "strong, yet cellular." Some of the uninitiated may not understand exactly what this means.

Coke can be strong in structure and also so dense and heavy as to be very undesirable. The typical coke is made up of minute cells through which the heat passes, and combustion is rapid and perfect. If the coke is too dense, this action is slow and unsatisfactory. On the other hand there are cokes so soft in structure as to crush in the cupola under heavy charges of ore or iron. These are only an annoyance and vexation of spirit.

You can get a typical coke by ordering a car load from us.

VINTON COLLIERY CO.,
Real Estate Trust Building,
Philadelphia.

To Exchange

for good stock shelf hardware in any good town, a Nebraska farm of 320 acres under irrigation; about 130 acres under cultivation, 2¾ miles from Lexington on U. P. Ry. County seat, finely situated, excellent soil, clear title, free from incumbrance. Address

"H.,"
office of *The Iron Age*, 805 Fisher Bldg., Chicago

FOR SALE.

RE-LAYING STEEL RAILS.

3,000 tons Prime Re-Laying Steel Rails, 56 lbs. per yard, with all the Angle Fish Plates to suit, for delivery in New York Harbor.

DANA & CO., 32 Broadway, New York.

Cable Address: "Dana, New York.

FOR BURNT LEATHER

: ADDRESS :

L. I. ENSWORTH & SON, Hartford, Conn.

HELP WANTED.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

Experienced man as ORDER ENTRY CLERK; must have thorough knowledge of power transmission machinery, and also of general supplies for engines, flouring mills and grain elevators; technical knowledge of flour mill machinery not necessary; one who has held exactly similar position preferred; must thoroughly understand analyzing, subdividing, making sketches and entering detailed parts of machinery orders ready for machine shop; mechanical experience necessary; state experience, give reference and salary. Address Great Western Mfg. Company, Leavenworth, Kan.

MACHINISTS.—Two good, active rolling mill machinists. Write fully to Worth Brothers Company, Coatesville, Pa.

A competent DRAFTSMAN or MECHANICAL ENGINEER with capital to take an interest in a live concern with a good line of standard tools who desires to add another large line. Address "J. M. R.," office of *The Iron Age*, 22-24 Pickering Building, Cincinnati, Ohio.

HELP WANTED.

A first-class ROLLER for a merchant steel mill; one accustomed to hand rolling as small as ¾ inch diameter; a sober, competent man will find a good position. Address Andrew Cone, 89 Tribune Building, New York City.

SALESMEN frequently visiting the agricultural implement and hardware trades in the New England, Eastern and Southern States to sell as a side line our patent plow spring on commission; an article that easily sells; write for particulars. Keystone Plow Spring Company, Renshaw Building, Pittsburgh, Pa.

ROLLER.—A competent, sober and up to date skelp and bar mill roller for 10-inch train; Eastern Pennsylvania; steady employment; state age and experience. Address "W. H. L.," office of *The Iron Age*, 232-238 William street, New York City.

WANTED.

Draftsman — Rolling Mill.

Draftsmen, familiar with light rolling mill work, wanted in an Eastern city. Write full statement, giving age, experience, by whom now employed, present and desired salary, also reason for wishing to make a change.

Address "W. M.,"

office of *The Iron Age*, 232-238 William St., N. Y.

SITUATIONS WANTED

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

FOREMAN PATTERN MAKER would like to correspond with manufacturing company in want of a first-class man; thoroughly experienced as foreman and draftsman, and in managing a large force satisfactorily; for a permanent position a moderate salary would be accepted, and can go anywhere; references. Address "Foreman," office of *The Iron Age*, 805 Fisher Building, Chicago, Ill.

As ROLLER; 18 years' experience on steel and iron shapes, bar, guide rails, skelp and cold rolled. Address C. L. Moore, 546 Gordon street, Reading, Pa.

A young man who has held successively the positions of chemist, founder and superintendent of a blast furnace, who has distributed from 15,000 to 60,000 tons of pig iron per year satisfactorily to employers and customers, and who thoroughly understands mixing irons for foundry use, wishes position with large users of pig iron as INSPECTOR, or with commission house as salesman to introduce special irons into foundries; reference from all of former employers. Address "Comprehension," office of *The Iron Age*, 232-238 William street, New York City.

GUIDE ROLLER of 14 years' experience wants position; used to spike, bolt and all merchant work. Address "Spike," office of *The Iron Age*, 232-238 William street, New York City.

By a practical man, a position to take charge of a tin factory; best of reference. Address "Tin Factory," office of *The Iron Age*, 232-238 William street, New York City.

ENAMELING.—Wanted to take charge of a factory; understands the making up of hollow ware and enameled ware; best of reference. Address "Enameling," office of *The Iron Age*, 232-238 William street, New York City.

Employment as ASSISTANT to SUPERINTENDENT or similar position in open hearth steel plant or rolling mill by young engineer; has had experience in acid and basic furnaces, gas machinery, &c., and can analyze if required; good references. Address "Assistant Superintendent," office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

By a thorough HARDWAREMAN and SALESMAN in the store and on the road; competent office man; experienced in all branches of general and builders' hardware, cutlery, guns, household goods, &c.; has also been buyer and manager of a hardware business; ten years on the road; best references. Address "Experience," office of *The Iron Age*, 232-238 William street, New York City.

IRON FOUNDRY FOREMAN of 25 years' experience, an all around, practical man, is open for engagement to run shop on basis of ton or day work; locomotive or stationary engine work preferred. Address "T. or D.," office of *The Iron Age*, 232-238 William street, New York City.

As HAMMERSMITH on locomotive and general forgings. Address, with terms, "W. G.," 933 Penn avenue, Scranton, Pa.

CHEMIST.—Young man, with two years' laboratory experience, would like to obtain position as chemist with an iron or steel firm; best of references given. Address Wm. T. Baxter, Stevens Institute, Hoboken, N. J.

Graduated MECHANICAL ENGINEER, 20 years' experience at modern works, desires change of position, either superintendent, engineer, chief draftsman or master mechanic; now 12 years as head of engineering department at one of the largest steel works in America. Address "Boac," office of *The Iron Age*, 232-238 William street, New York City.

ROLLER, 36, hoop, bar and guide, iron or steel; also horseshoes; 12 years' experience; sober; hustler; best of reference. Address "Guide, 119," office of *The Iron Age*, 232-238 William street, New York City.

METALLIC CARTRIDGE AND PAPER SHOT SHELLS.—Those who are in the manufacture or wish to engage in the business can secure services of a man thoroughly posted in either or both branches to act as superintendent; thorough mechanic and tool maker. Address "Cartridge," office of *The Iron Age*, 232-238 William street, New York City.

Man of 31 years, with nine years' experience in office of machine manufacturer as salesman and buyer, wishes to make a change; practical mechanic; can handle men, but prefers to act as salesman or buyer; speaks two languages; can give best references. Address "A. S. A.," P. O. Box, 23, Yonkers, N. Y.

As MILL SUPERINTENDENT; 20 years' practical experience; up to date in all modern practice of manufacturing bar iron from scrap; best of references from present employers. Address "Roller," office of *The Iron Age*, 232-238 William street, New York City.

ROLL TURNER wants position; accustomed to turning rolls for both iron and steel; can furnish good references as to character and ability. Address "Turner," office of *The Iron Age*, 232-238 William street, New York City.

A gentleman, with ten years' experience as office man and manager in iron and steel business, is open for engagement. Address "Treasurer," 654 Grand street, Brooklyn, N. Y.

Experienced iron and steel works chemist wants a position. Address "Chemist," office of *The Iron Age*, 805 Fisher Building, Chicago, Ill.

A mechanical and naval engineer (just relieved from official duty in the war with Spain) desires occupation in New York City; age over 40; best references as to business and social standing. Address "Commissioned Officer," office of *The Iron Age*, 232-238 William street, New York City.

HARDWARE SALESMAN with first-class concern; 20 years' store and road experience; thoroughly posted in all branches of hardware business; strictly temperate, honest and capable; successful as buyer and manager of large retail business; first-class references. Address "C. J. A.," P. O. Box 744, Providence, R. I.

By man capable of assuming control of large plant, position as BUSINESS MANAGER, PURCHASING or SELLING AGENT for machine shop and foundry, or factory manufacturing specialties or general metal work; has all necessary references. Address "Business," care M. D. R. Company, Indian Orchard, Mass.

Steel works SUPERINTENDENT wants situation; experienced in open hearth and crucible steel making; sheets and plates, special shapes, finely finished machinery and agricultural implement steels, cold rolled and tool steel and steel forgings; modern mills and methods; highest references as to character and ability. Address "Steel Works," office of *The Iron Age*, 232-238 William street, New York City.

By a careful, reliable, energetic man of 24 position as private secretary, stenographer or to take charge of commercial correspondence, with opportunity for promotion; nine years' experience in large machine works office; unquestioned reference from present employers; correspondence solicited. Address "X. X. X.," office of *The Iron Age*, 232-238 William street, New York City.

FOREMANSHIP of foundry wanted, making heavy or medium castings in loam, dry and green sand; good results handling cupola and men. Address "H. M. C.," office of *The Iron Age*, 232-238 William street, New York City.

AGENCY WANTED.

Gentleman with 15 years' experience Iron and Steel business, seven of which as manufacturer's agent, office in Philadelphia, covering Eastern territory, desires additional agencies, either on small salary and commission or all commission. All accounts given thorough attention. Address

"W.,"

office of *The Iron Age*, 117-119 So. 4th St., Phila.

A thoroughly practical factory MANAGER, familiar with every position along the line of practice in machine shops, foundries and kindred departments, would be pleased to correspond with parties requiring the services of an energetic manager; salary or share. Address "Executive," office of *The Iron Age*, 232-238 William street, New York City.

MECHANICAL ENGINEER, SUPERINTENDENT OR SALESMAN.—An American, of good address, 40 years of age, with excellent record, good executive ability, a fine organizer and manager in both office and shop, wants connection with first-class house; no objection to traveling in this country or abroad. Address Box 520, office of *The Iron Age*, 805 Fisher Building, Chicago, Ill.

As SUPERINTENDENT and FOREMAN of architectural and structural iron works; I am at present employed, but desire to change position; have held similar position for the last ten years and capable of handling men; I am 35 years of age and have 21 years' practical experience; can give best of reference as to character and ability; speak German and English. Address "A. F.," office of *The Iron Age*, 232-238 William street, New York City.

By a young man, 22 years of age, having good knowledge of the hardware business, a position in a hardware jobbing house, either at office work, salesman or any other position he might prove to be qualified to fill and which offers opportunity for advancement; best of references. Address "H. E.," office of *The Iron Age*, 232-238 William street, New York City.

By a gentleman of 20 years' experience in hardware, paint and glass business, retail and wholesale; has filled all positions incident to the business in office salesroom and traveling; manager and buyer ten years; complete knowledge of door sash and blind business; willing to work hard in any department; best of references. Address "F., 40," office of *The Iron Age*, 232-238 William street, New York City.

A position as FOUNDRY CLERK; have had three years' experience; can keep correct account of time of day and piece workers, of patterns and castings, and all accounts in any way connected with the working of a first-class foundry; age 22 years; desire for change being because I wish to better myself and get with some good firm where merit will make an opening for advancement. Address "Time Keeper," office of *The Iron Age*, 232-238 William street, New York City.

Would like to correspond with some company that is in need of an industrious FOUNDRY FOREMAN; am a practical molder; have had ten years' experience as a foundry foreman, making light and heavy work; understand economical melting and mixing of iron; references given as to character and ability. Address "Industry," office of *The Iron Age*, 232-238 William street, New York City.

In the jobbing hardware business; have had over 20 years' experience and am thoroughly familiar with it in all of its branches; have had long experience both as city and stock buyer, and would be competent to fill such a position, either as assistant or principal; have a good acquaintance and trade in Northern and Central New York on the line of New York Central Railroad. Address "Sterling," office of *The Iron Age*, 232-238 William street, New York City.

By young man as TRAVELING SALESMAN for hardware, paint, bicycle or household furnishings house; ten years' experience as buyer and owner of retail business in above lines; would take position requiring only part time; New England preferred; best of references. Address "B. W. C.," office of *The Iron Age*, 232-238 William street, New York City.

A thoroughly competent man in the manufacture of fire brick, hollow brick and porous fire proof building material, ornamental building brick and glazed sewer pipe desires an engagement as FOREMAN or SUPERINTENDENT. Address "Clay Goods," office of *The Iron Age*, 232-238 William street, New York City.

As an ELECTRO PLATER; have had a wide experience; can manage polishing, buffing, plating and lacquering; have had charge of departments in the best of factories; understand all kinds of metals; best references furnished if desired. Address "Electro Plater," office of *The Iron Age*, 232-238 William street, New York City.

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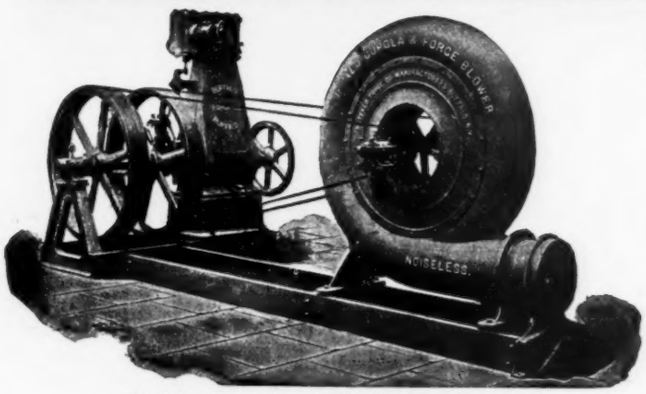

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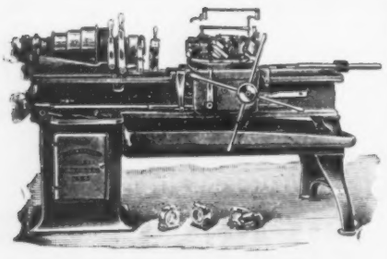

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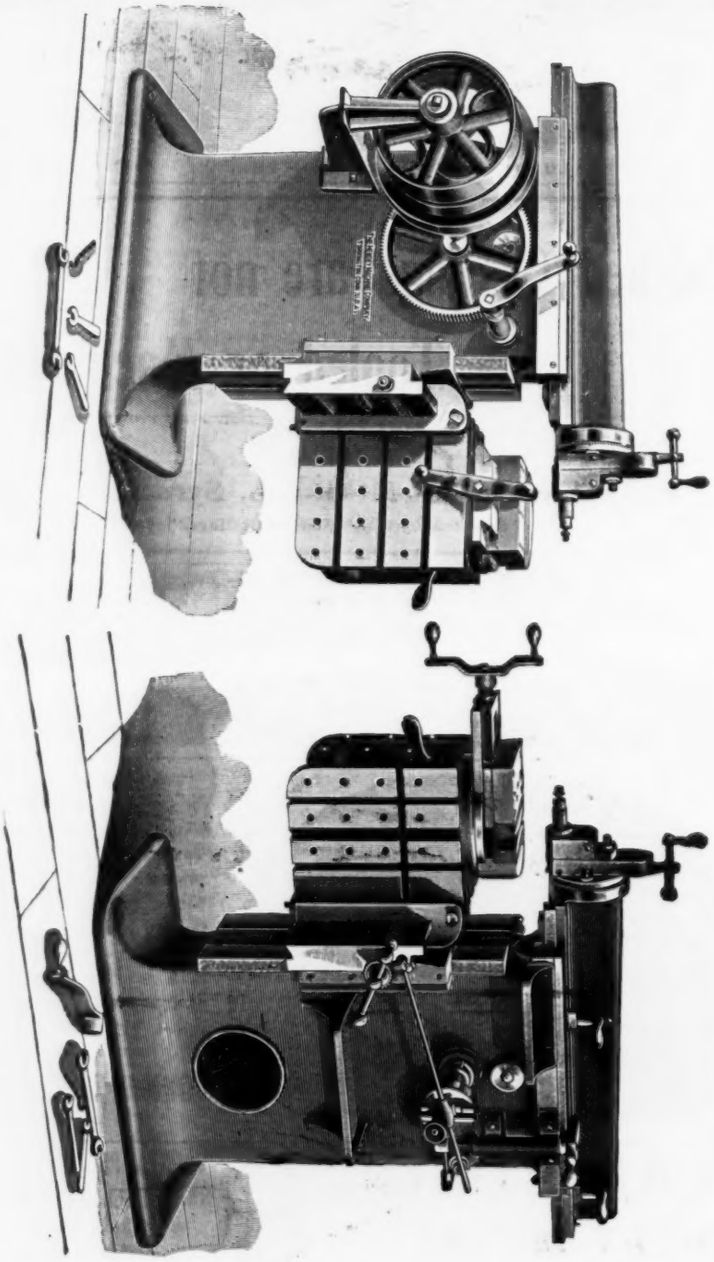

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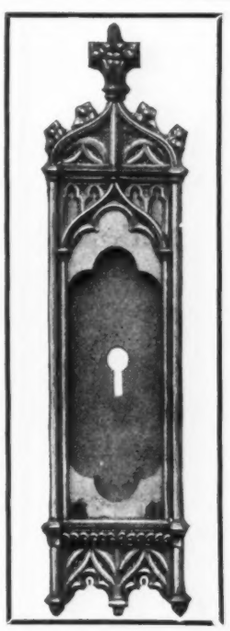

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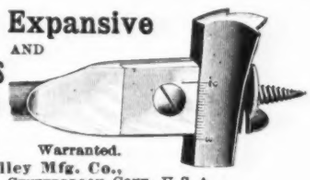

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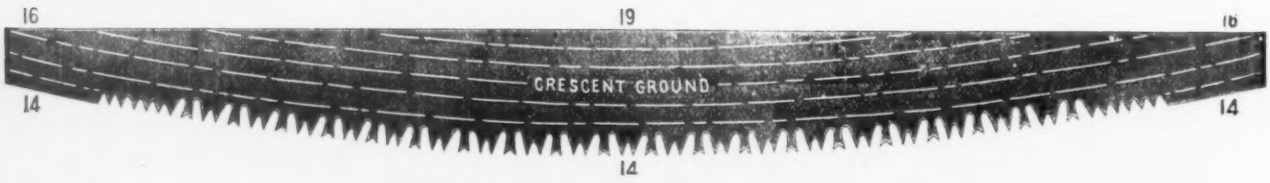

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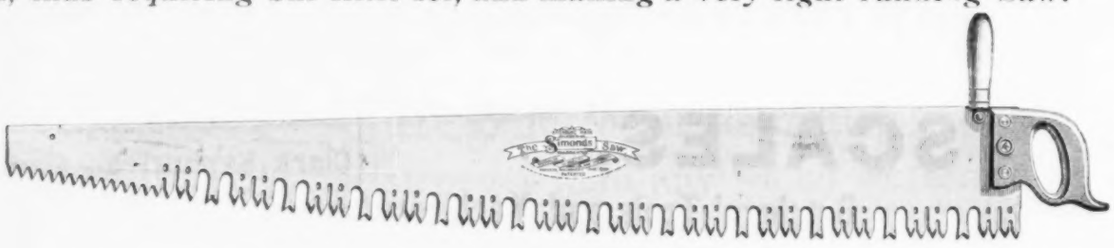

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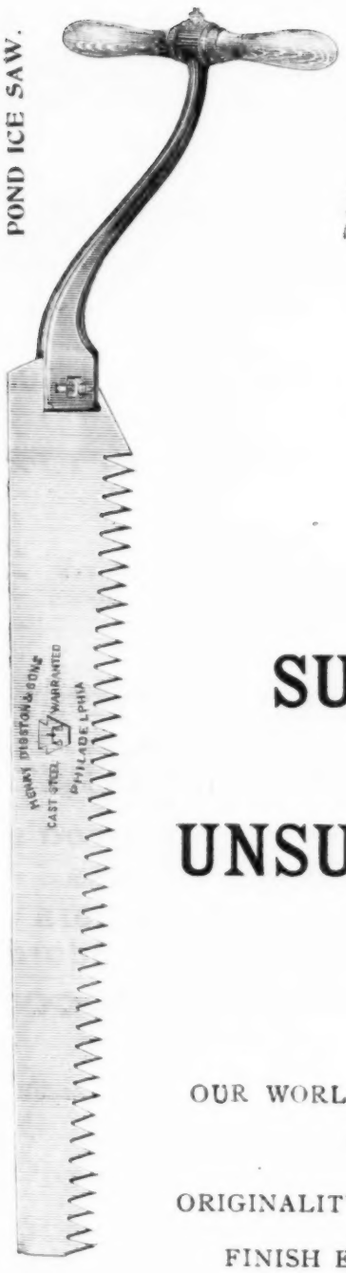

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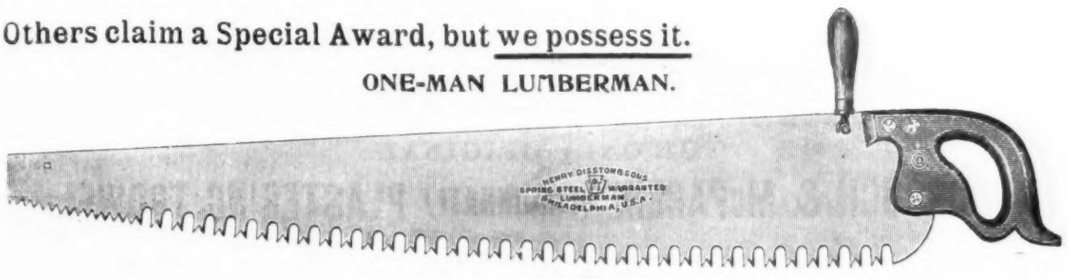

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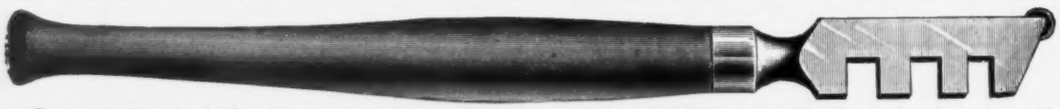

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"There Are Others,"

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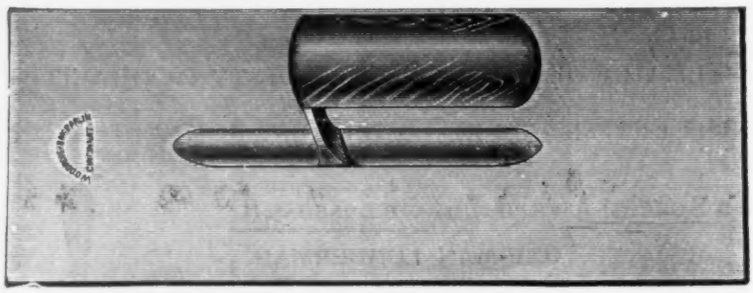

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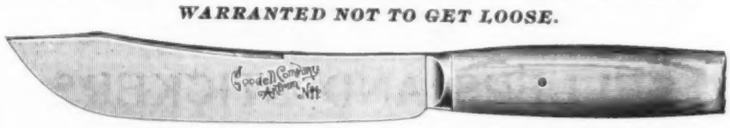
Solid Cocobolo Swell Handle with Bolster.

WARRANTED NOT TO GET LOOSE.



No. 146, 5, 5½, 6, 6½, 7 and 8 inch.

Five Rivet, Scaletang Beech Handle.

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The Steel That Goes into Goodell Butcher Knives is made for Goodell Butcher Knives and is found in no others. It is the same we have used for years. A quarter century experience has taught us how to manipulate that steel to produce the best results.

It costs more to make a good knife than a poor one, but not so much more as you might think (if you know how).

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The '98 Chicago Clipper Retails For $8.75.

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HAIR CLIPPERS.

If you want a clipper "with a reputation" insist on the "Stewart Patent." There is no other "just as good" and they will cost you no more than the inferior kind.

We have just been awarded Gold Medal at Trans-Mississippi Exposition, highest and only award for horse clipping, sheep shearing and cattle grooming machines.

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HAMMACHER, DELIUS & CO., Hamburg, Germany,
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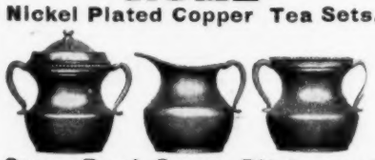

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Heavily Silver Lined.

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NICKEL PLATED COPPER WARE.

Tea and Range Kettles, Tea and Coffee Pots, Silver and Tin Lined, Trays, Serving Dishes, Pitchers, Insets, Wash Basins, Wash Boilers, Tea Sets, Cups, Dippers, Stove Tanks, Cuspidors, Etc.,

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SELLERS AND STICKERS.

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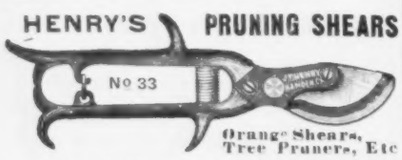

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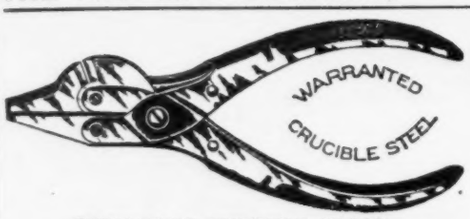

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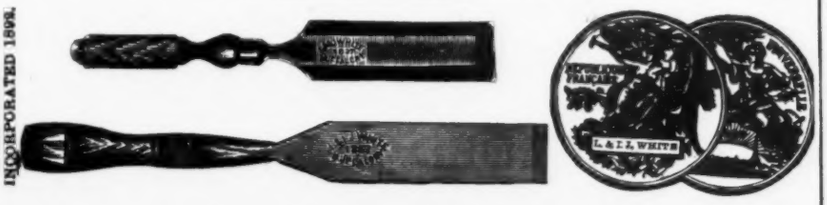

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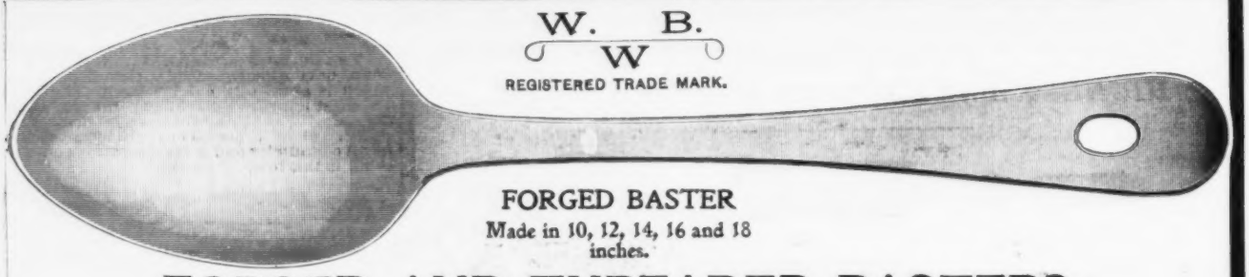

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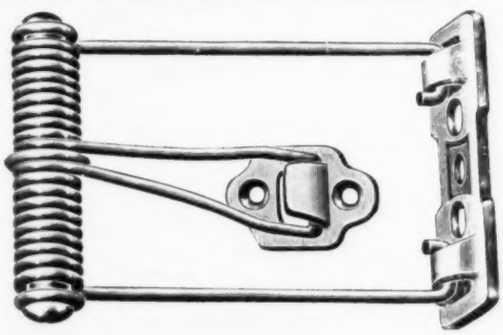

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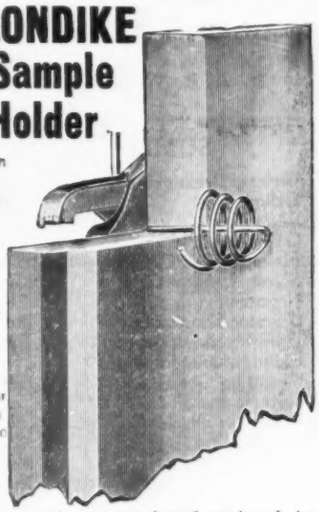

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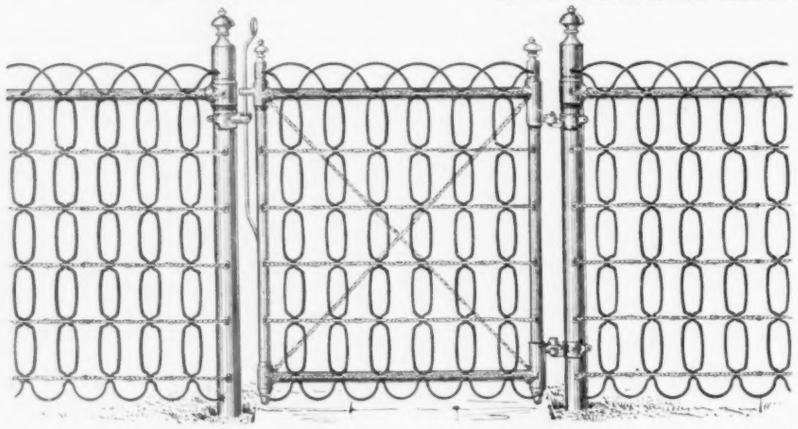

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SUMMARY OF CONTENTS.

General Arrangement.
Office.
Shelving.
Galleries.
Elevators and Cranes.
Show Windows.
Counters.
Counter Showcases.
Upright Showcases.
Ceiling Arrangement.
Sampling Goods.
Signs in the Store.
Pillars for Displaying Goods.
Scales.
Roll Paper.
Nails.
Farm and Garden Tools.
Scythes.
Bolts, Screws, etc.
Crosscut Saws.
Hand Saws.
Edge Tools.
Planes.
Squares.
Plumbs and Levels.
Axes and Hatchets.
Cutlery.
Sporting Goods.
Locks and Door Trimmings.
Sandpaper.
Screen Wire Cloth.
Wire.
Files.
Horseshoes.
Chains.
Belting.
Rope.
Handles.
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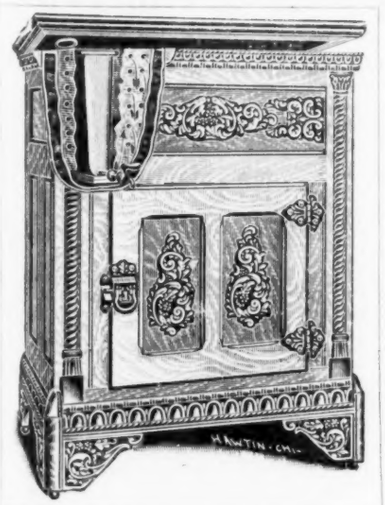

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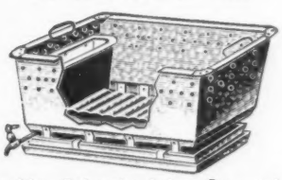

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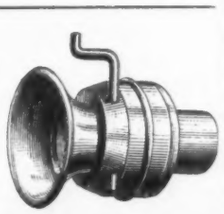

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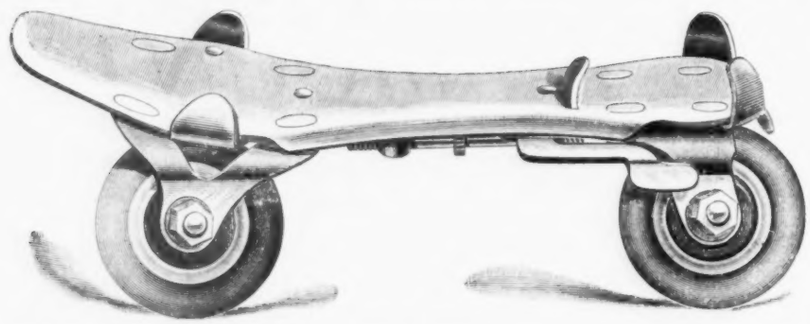

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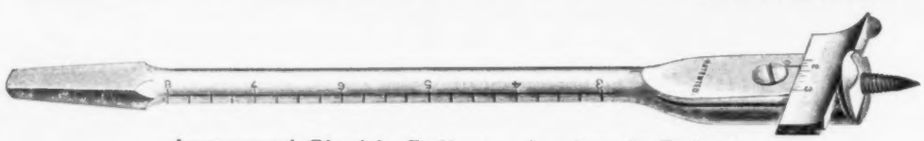

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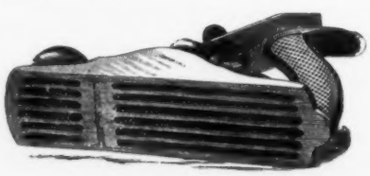

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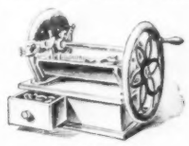

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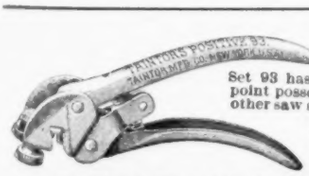

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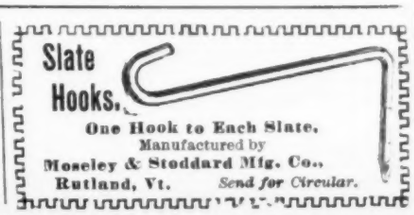

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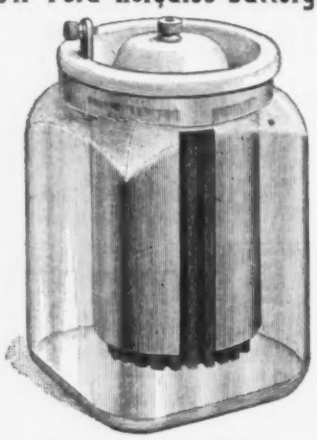

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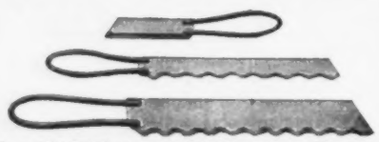

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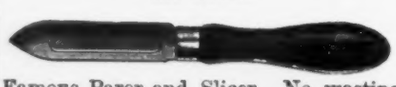

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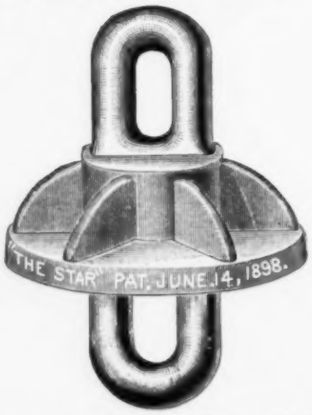

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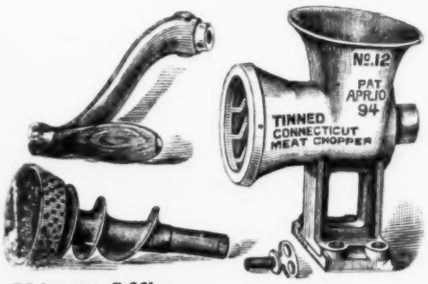

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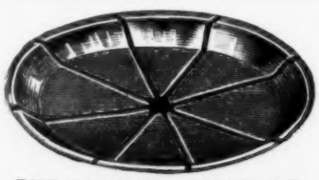

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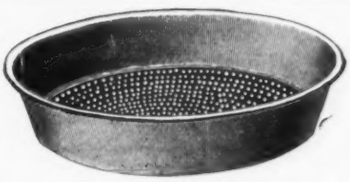

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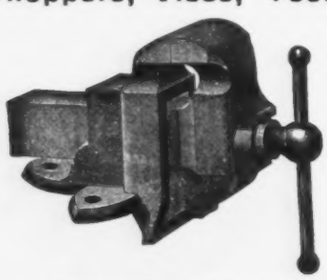

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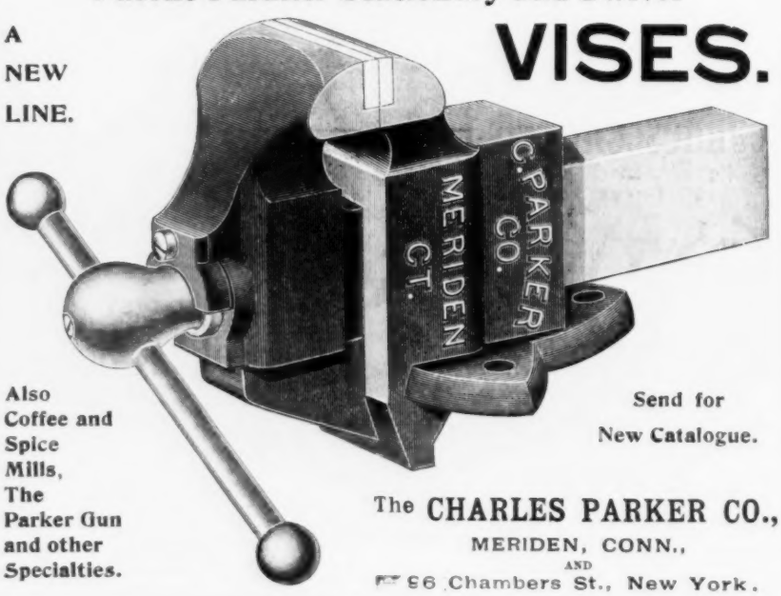

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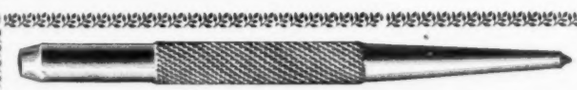

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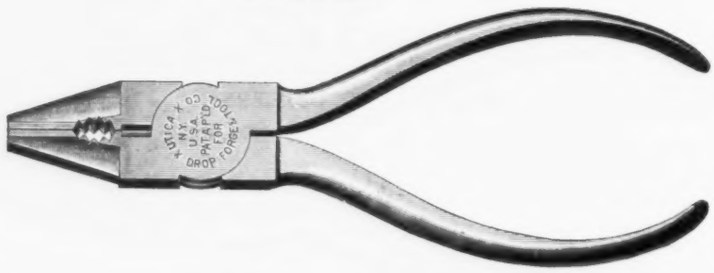

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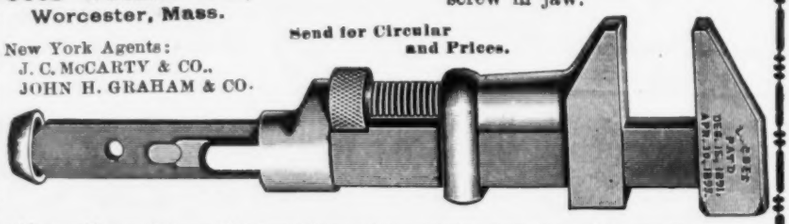

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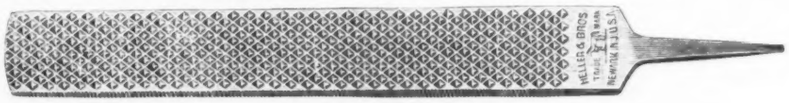

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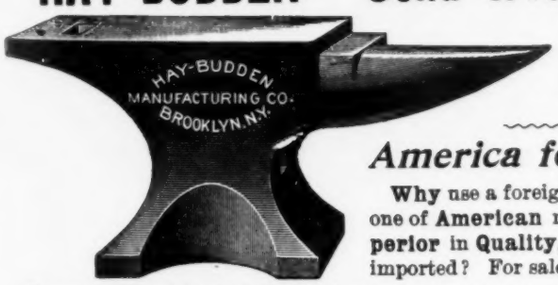

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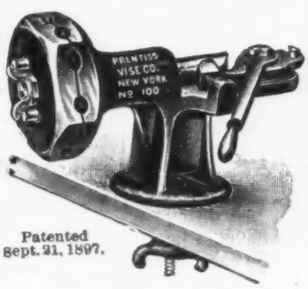

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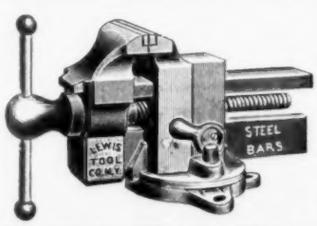

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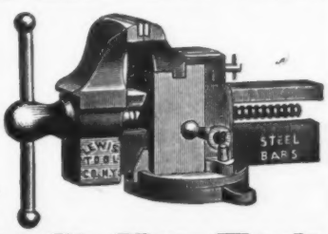

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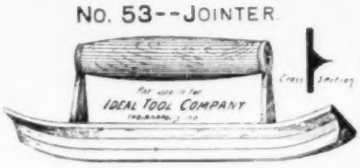

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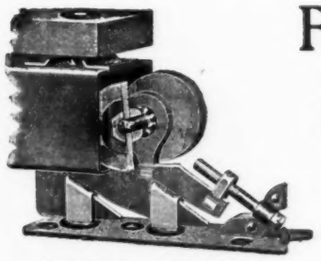

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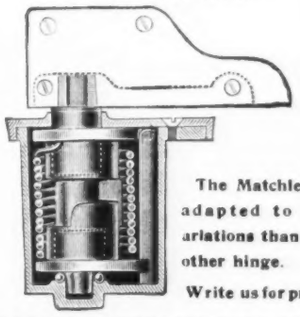

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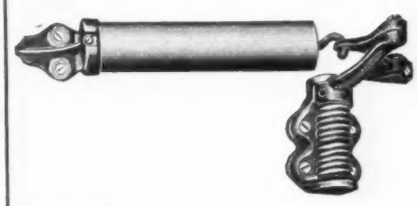

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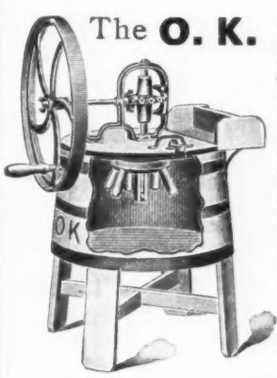

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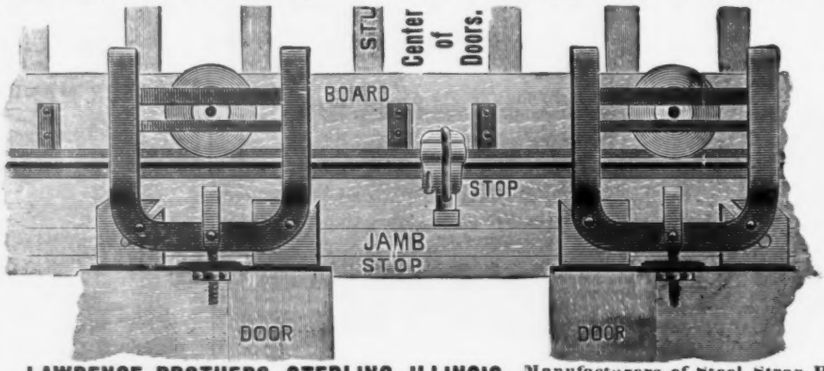

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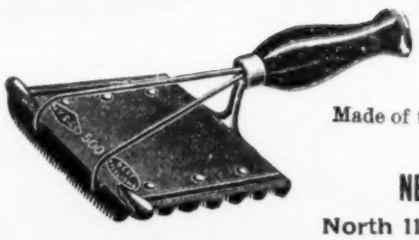

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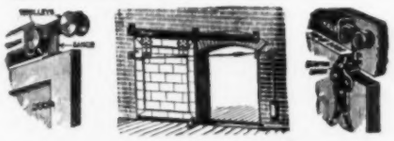

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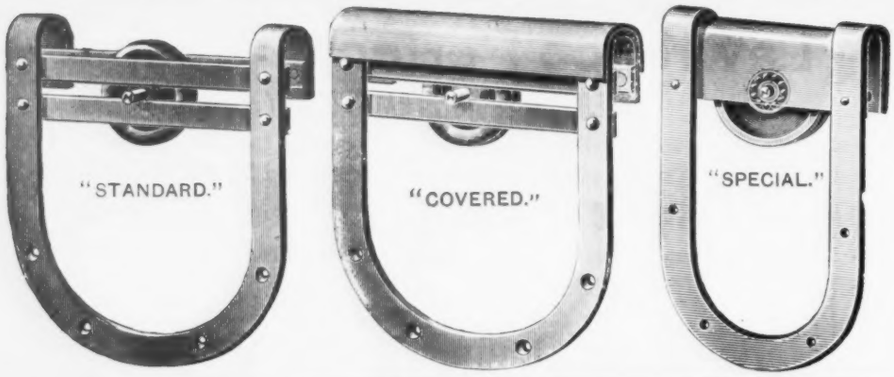

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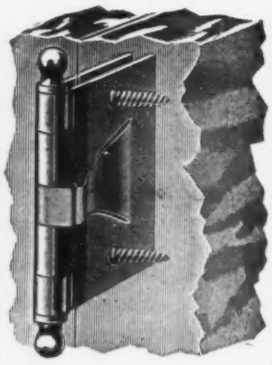

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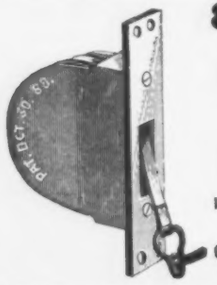

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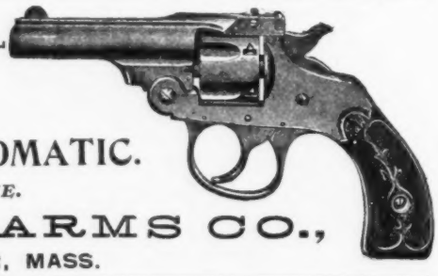

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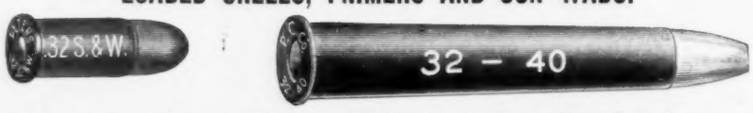

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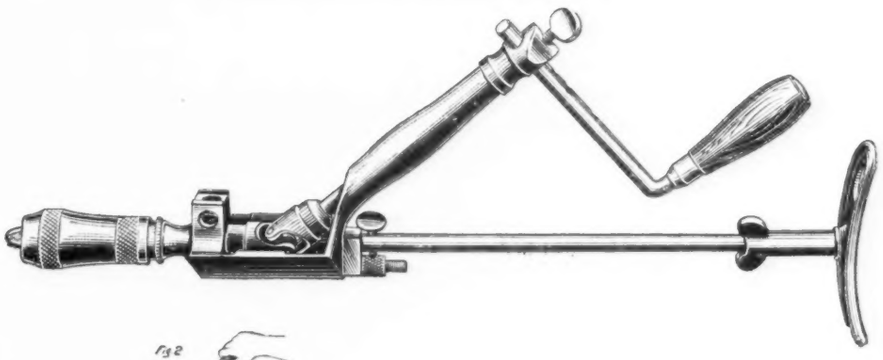


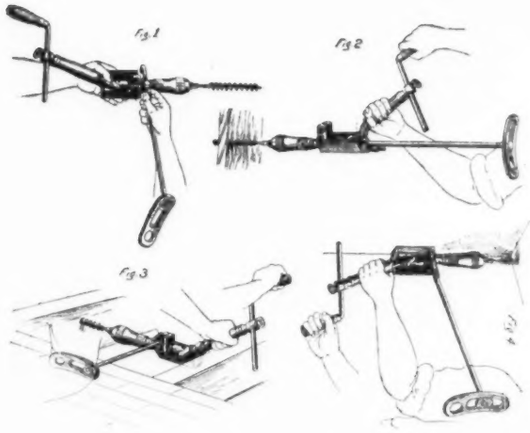


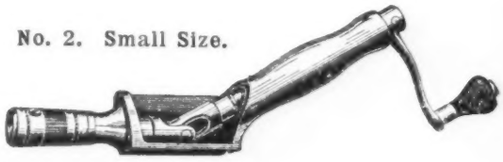
Fig. 1 represents assembling the breast rest into one of the positions.

Fig. 2 being used as an ordinary breast brace.

Fig. 3 in use boring between joist in floor.

Fig. 4 overhead, in corner, or between upper ceiling joist.

No. 2. Small Size.



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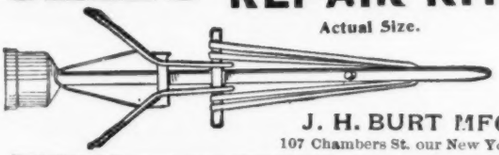

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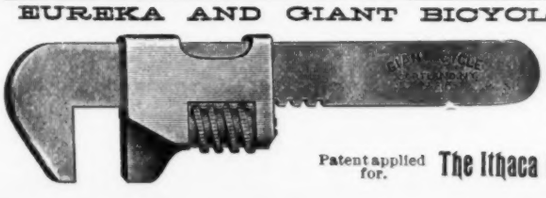

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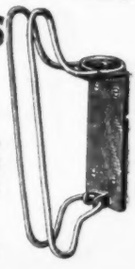

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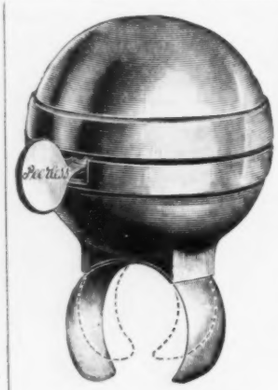

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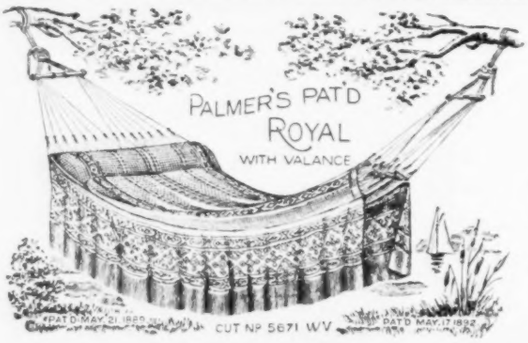

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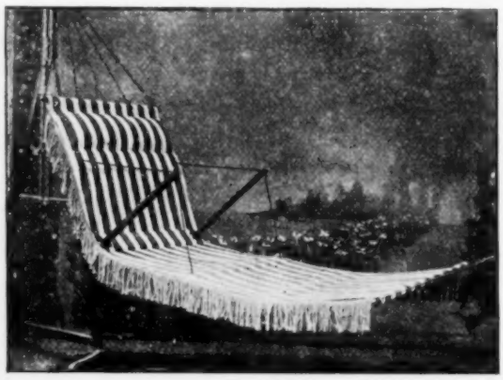

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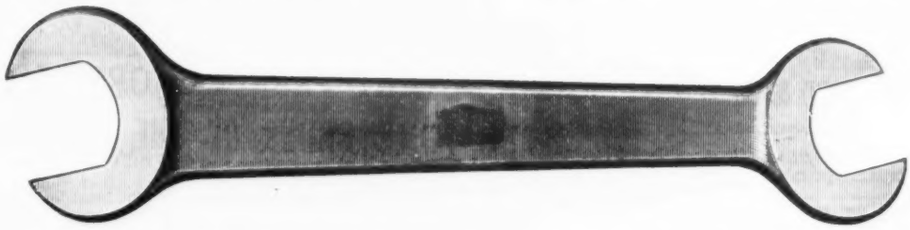

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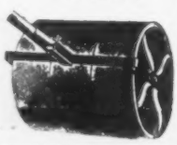

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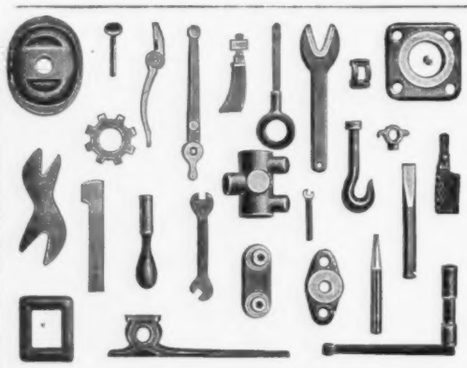

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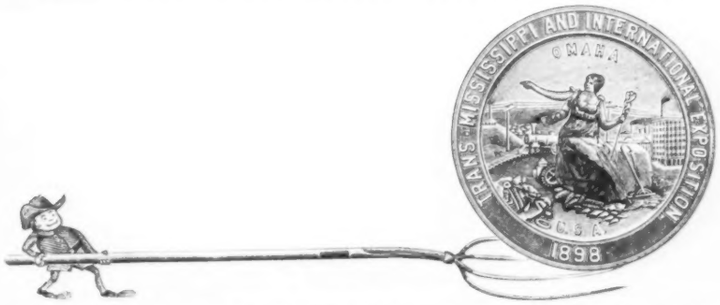

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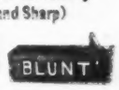

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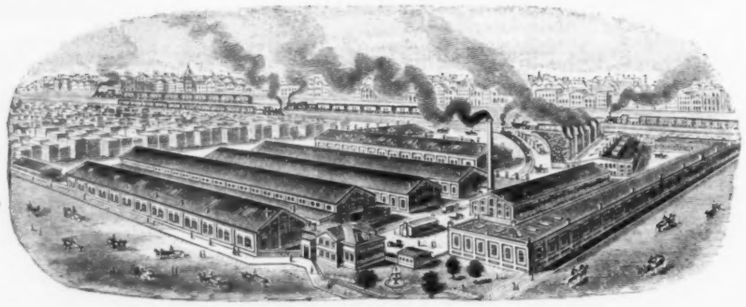

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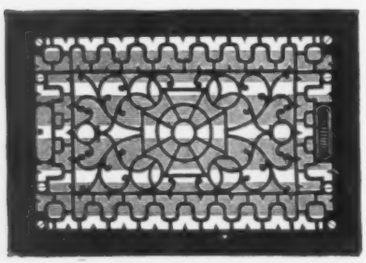

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FOR THE MILLIONS.

10 STYLES OF HAND MOWERS | 5 KINDS OF HORSE AND PONY MOWERS.

LARGEST AND FINEST ASSORTMENT MADE.

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THE ECONOMY BOLSTER SPRING

WITH PATENT EXTENSION ENDS, gives a perfect spring with either light or heavy load. Outer coils only act with light load; as the load increases the other coils and elliptic come into action. Manufactured by

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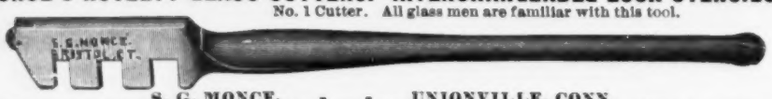

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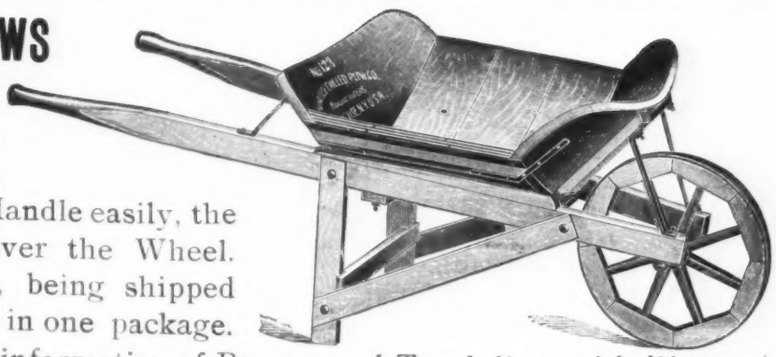

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THE BLACK DIAMOND
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Shovels and Spades.

BLACK DIAMOND—POLISHED.

G. 22.	D.	Handle	Plain Back,	Square Point	Shovels.
G. 32.	D.	"	"	Round	"
G. 42.	Long	"	"	Square	"
G. 52.	Long	"	"	Round	"
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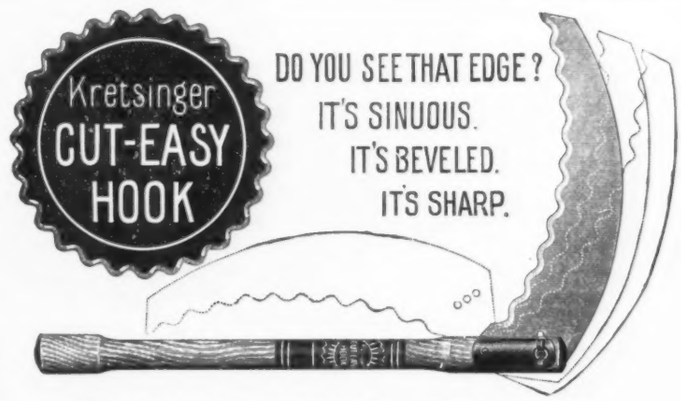

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Made by CARROLL Muzzle Co., CARROLL, Iowa.

NO WOUNDS, NO FRETTING.

Put weaners on calves, turn them out with the cows. They feed all right but can't suck.

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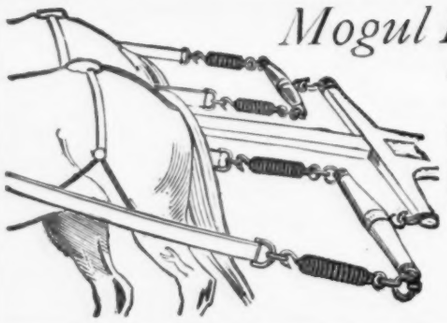

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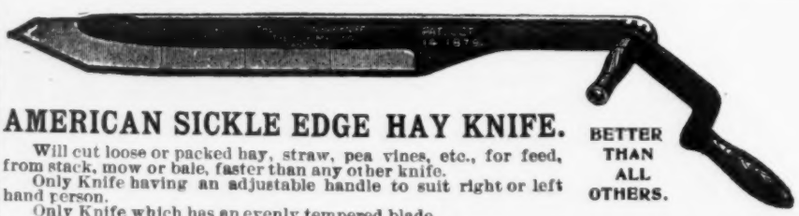

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Advertisement Writer.
Maule, Francis I., Philadelphia, Pa.

Agricultural Implements.
Iowa Farming Tool Co., Ft. Madison, Iowa.
Scovil, D. H., Higganum, Ct.
Withington & Cooley Mfg. Co., Jackson, Mich.

Air Compressors.
Baird, U. Machinery Co., Pittsburgh, Pa.
Clayton Air Compressor Works, 26 Cortlandt Street, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works, S. Norwalk, Ct.
Rand Drill Co., 100 Broadway, N. Y.

Air Rifles.
Markham Air Rifle Co., Plymouth, Mich.

Air Moving Machinery.
Howard & Morse, 45 Fulton, N. Y.

Alloys.
Blackwell, Geo. G., Sons & Co., Liverpool, England.

Alloy Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Aluminum.
Pittsburgh Reduction Co., Pittsburgh.
Scovill Mfg. Co., Waterbury, Conn.

Aluminum, Brass and Bronze.
Clark, John W., Albany, N. Y.

Aluminum Coated Sheet Steel and Iron.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Ammunition.
Peters Cartridge Co., Cincinnati, O

Anti-Friction Metals.—*See Babbitt Metal.*

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Britton, J. Blodgett & Co., Warrenton, Va

Ankle Brace.
Winslow, Sami. Skate Mfg. Co., Worcester, Mass.

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Hay-Budden Mfg. Co., Brooklyn, N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Anvil and Vise (Combination).
Fulton Iron & Eng. Wks., Detroit, Mich.

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Goodell Co. Antrim, N. H.
Reading Hardware Co., Reading, Pa.

Atlas Metal.
Trenton Malleable Iron Co., Trenton, N. J.

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Bissell, R. & Co., N. Y.

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Mayhew, H. H. Co., Shelburne Falls, Mass.

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Automatic Mch. Co., Bridgeport, Conn.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
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Manville, E. J. Mch. Co., Waterbury, Conn.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

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Hiertz, T. & Son., St. Louis, Mo.
Hoyt Metal Co., St. Louis, Mo.
Magnolia Metal Co., 266-267 West St., N. Y.
Markle Lead Works, St. Louis, Mo.
Nassau Smelting & Refining Wks., 28th St. & North River, N. Y.
Reeves, Paul S., Philadelphia, Pa.
Standard Smelting Wks., 389 Canal St.

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American Steel & Wire Co., Chicago, Ill.
Griswold Wire Co., Braddock, Pa.
Wilson, H. P. & H. F., 577-579 Tenth Ave., N. Y.

Ball Floats.
Naugatuck Mfg. Co., Naugatuck, Conn.

Barb Wire and Fence.
American Steel & Wire Co., Chicago, Ill.
Dillon-Griswold Wire Co., Sterling, Ill.
Washburn & Moen Mfg. Co., Worcester.

Bar Iron.
Ætna-Standard Iron & Steel Co., Bridgeport, Ohio.
Allentown Rolling Mill, Allentown, Pa.
Brown & Co., Inc Pittsburgh, Pa.
Burden Iron Co., Troy, N. Y.
Green Ridge Iron Works, Scranton, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Minnesota Iron & Steel Co., Minneapolis
Sternbergh, J. H. & Son, Reading, Pa.

Basters.
Wallace Bros., Wallingford, Conn.

Bathtubs.
Horton Mfg. Co., Ft. Wayne, Ind.

Bearings.
Ball Bearing Co., Boston, Mass.

Bellows.
Christen, F. & Sons, St. Louis, Mo.
Scott, Geo. M., Chicago, Ill.

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Bevin Bros. Mfg. Co., East Hampton.
Bristol Bell Co., Bristol, Conn.
Hill, N. N., Brass Co., E. Hampton, Ct.
Johnson, Geo., Catasauqua, Pa.
Starr Bros. Bell Co., Easthampton, Ct.

Belt Dressing.
Dixon, Jos. Crucible Co., Jersey City, N.J.

Belt Hooks.
Bristol Co. Waterbury, Conn.
Talcott, W. O., Providence, R. I.

Belt Studs.
Hungerford, U. T., 121 Worth St., N. Y.

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Ames Sword Co., Chicopee, Mass.
Boston Belting Co., Boston, Mass.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
Shultz Belting Co., St. Louis, Mo.

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Hilles & Jones Co., Wilmington, Del.
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Ames & Frost Co., Chicago, Ill.
Crawford Mfg. Co., Hagerstown, Md.
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Remington Arms Co., Ilion, N. Y.
Sterling Cycle Works, Kenosha, Wis.
Supplee Hardware Co., Phila., Pa.

Bicycle Bells.—*See Bells and Gongs.*

Bicycle Chains.
Bridgeport Chain Co., Bridgeport, Ct.

Bicycle Grips.
Jones, L. M. Co., Winsted, Ct.

Bicycle Holders.
Snow Wire Works, Rochester, N. Y.

Bicycle Lamps.
Badger Brass Mfg. Co., Kenosha, Wis.
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Twentieth Century Mfg. Co., 17 Warren St., N. Y.

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Garvin Mach. Co., Spring & Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.

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Springfield Machine Screw Co., Springfield, Mass

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Excelsior Needle Co., Torrington, Ct.

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Burt, J. H. Mfg. Co., Springfield, Mass.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hill, N. N. Brass Co., E. Hampton, Ct
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Mossberg Wrench Co., Attleboro, Mass.
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Ithaca Drop Forge Co., Ithaca, N. Y.
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Hendryx, Andrew E. Co., New Haven, Conn.

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Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co. Buffalo, N. Y.
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Wilbraham-Baker Blower Co., Phila., Pa.

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Eynon-Evans Mfg. Co., Phila., Pa.

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Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

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Prentice Bros., Worcester, Mass.

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Lukens Iron & Steel Co., Coatesville, Pa.
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Boiler Tubes.
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National Tube Works Co., McKeesport, Pa

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Cahall Sales Dept., Pittsburgh, Pa.
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Wetherill, Robt. & Co., Chester, Pa.

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Chambers Bros. Co., Philadelphia.
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Porter, H. K., Boston, Mass.

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Ajax Mfg. Co., Cleveland, Ohio.
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Detrick & Harvey Mch. Co., Baltimore, Md.
National Machinery Co., Tiffin, Ohio.

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American Bolt Co., Lowell, Mass.
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Dunham Nut Co., Unionville, Conn.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
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Brass Butt Hinges.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Tiebout, W. & J., 16 & 18 Chambers.

Brass Butts.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

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Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

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Brass Goods Mfg. Co., 88 Chambers.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
Hungerford U. T., Brass & Copper Co., 121 Worth St., N. Y.

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Osborn Mfg. Co., Cleveland, O.

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Cleveland Galvanizing Wks., Cleveland

Buggies.
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Harrington, Dexter & Son, Southbridge, Mass.
Nichols Bros., Greenfield, Mass.

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Roberts, A. & P. & Co., Phila.

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Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
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Buck Bros., Millbury, Mass.

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Ferro-Carbon Castings Co., Philadelphia, Pa.

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Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

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Castings, Iron.
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Standard Fdy. & Mfg. Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Boston Cast Steel Casting Co., Mattapan, Mass.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

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Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cement Workers Tools.
Ideal Tool Co., Indianapolis, Ind.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co. Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. R. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.
Railway Supply Co., St. Louis, Mo.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Bennett Geo. B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Box, Alfred & Co., Philadelphia, Pa.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
New York Stamping Co., Brooklyn, N. Y.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Illinois Cutlery Co., Decatur, Ill.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg. Co., Cleveland, O.

Dog Collars.
Union Hardware Co., Torrington, Conn.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Larimer Mfg. Co., Pittsburg, Pa.
Norton Door Check & Spring Co., Boston.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N. Y.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.

Drilling Machines, Automatic.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Williams White & Co., Moline, Ill.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Standard Co., Boston, Mass.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Electrical Repairing.
Cleveland Armature Works, Cleveland, Ohio.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Schofield & Co., Freeport, Ill.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa.
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
New Castle Engineering Works, Pittsburgh, Pa.
Phillips, F. R. Sons, Phila., Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Lambert Gas & Gasoline Engine Co., Indianapolis, Ind.
New Era Iron Works, Dayton, Ohio.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Westinghouse Machine Co., Pittsburgh, Pa.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Bay State Iron Works, Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Lane & Bodley Co., Cincinnati, O.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engine and Boiler Supplies.
Sherwood Mfg. Co., Buffalo, N. Y.

Engravers.
Mugford, A., Hartford, Conn.

Exhibition, Export.
International Land & Exhibition Co., New York.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exterminators, Insect.
Smith, D. B. & Co., Utica, N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets.
Litchfield, J. M., Brooklyn, N. Y.
McKenna, A. & T., Pittsburgh, Pa.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago, Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Finished Castings.
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Pressbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Phila., Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Sherwood Mfg. Co., Buffalo, N. Y.

Flue Cutters.
Groves & Haines, Philadelphia, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign, Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Bultman, F. H. & Co., Cleveland, O.
Clough, R. M. Toland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R.
Florence Machine Co., Florence, Mass.

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Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Standard Machine Co., Holyoke, Mass.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.
Union Hardware Co., Torrington, Conn.

Hack Saw Blades.
Goodell Bros. Co., Greenfield, Mass.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn

Hand Milling Machines.
Costigo, J. E. Machine Works, Brooklyn, N. Y.

Hangers, Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield, Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co., Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Parker, Cnas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Suppiee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland, O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain.
North Bros. Mfg. Co., Philadelphia, Pa.
Parks & Parks, Troy, N. Y.
Pfeuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Box, Alfred & Co., Phila.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading.
Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rome Mfg. Co., Rome, N. Y

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Household Specialties.
Parks & Parks, Troy, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Gerlach, Peter & Co., Cleveland, O.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Luengenerg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila., Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.

Job Lots, Hardware.
Chicago House Wrecking Co., Chicago, Ill.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pfeuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio.
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pfeuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.

Locks and Knobs.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Coulter & McKenzie Mach. Co., Bridgeport, Conn.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila., Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
King & Walker Co., Madison, Wis.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Poulterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Hartford Mch. Screw Co., Hartford, Ct.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Man Hole Forming Tools.
Haworth Mfg. Co., Liberty, Ind.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.
Dubuque Business Men's League, Dubuque, Iowa.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N. Y

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milk Cans.
Shepard, Sidney & Co., Buffalo, N. Y.

Milling Attachment for Lathes.
Adison Mfg. Co., Phila., Pa.

Milling Machines.
Adams Co., Dubuque, Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence,
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gliem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill
Howard & Morse, 45 Fulton St., N. Y.

Molding Machines.
Pridmore, Henry E., Chicago, Ill.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Atherton, Jesse, Auburn, R. I.
Bates Machine Co., Joliet, Ill.
Crescent Mfg. Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.

Nail Sets.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J
Zucker & Levitt & Loeb Co., 526-530 W. 25th St., N. Y.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Johns H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

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Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Watt r & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N. Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Poultry Fencing.
De Kalb Fence Co., De Kalb, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland, Ohio.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dieneit & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Sons Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'ry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Woolley Fdry. & Mch. Works, Anderson Ind.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T Mfg. Co., Hamden, Conn
Smith, Seymour & Son Oakville, Conn.

Pruning Shears.
Smith, Seymour & Son, Oakville, Conn.

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pump Chains.
Cleveland Galvanizing Wks., Cleveland.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Meyers, Fred. J Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
King & Walker Co., Madison, Wis.
Long & Allstatter Co., Hamilton, Ohio.
Mersick, C. S. & Co., New Haven Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Gurney Refrigerator Co., Fond du Lac, Wis.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way. N.Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham, 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Machines.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Keuffel & Esser Co., 127 Fulton St., N. Y.
Stanley Rule & Level Co. 29 Chambers,

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff Novelty Co., Gibsonburg, O.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Foster, H. H., Canot Vt.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Saw Vises.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scales.
American Cutlery Co., Chicago, Ill.
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Check Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
New England Specialty Co., No. Easton, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Hartford Mach. Screw Co., Hartford, Ct.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Franklin Moore Co., Winsted, Conn.
Hartford Mch. Screw Co., Hartford, Ct.
Haskell, Wm. H. Mfg. Co., Pawtucket,
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Semi-Steel.
Birmingham Iron Foundry, Birmingham.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Seliers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shelving.
Warren, J. D. Mfg. Co., Chicago, Ill.

Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Union Hardware Co., Torrington, Conn
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners.
Union Hardware Co., Torrington, Conn.

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Marvle Lead Work, St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N. Y.

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

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Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O
Dunbar Bros., Bristol, Conn.
Lord Bros Mfg. Co., Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Hoffman Hinge Co., Cleveland, Ohio.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N.Y.

Stamping, Sheet Metal.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dieneit & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
D'Este & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
D'Este & Seeley Co., Boston, Mass.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.
Sennett, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
D'Este & Seeley Co., Boston, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport,
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Manufacturers' Agents.
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke,
Milbradt, G. A. & Co., St Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Card, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield,

Stokers.
Box, Alfred & Co., Philadelphia, Pa.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Cleveland, O.
Warren, J. D. Mfg Co., Chicago, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stoves, Oil, Vapor & Gasoline.
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

Tap Holder.
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Besly, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Proudman Bros., Meriden, Conn.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Tea Kettles.
Rome Mfg. Co., Rome, N. Y.

Tea and Coffee Pots.
Rome Mfg. Co., Rome, N. Y.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore.

Tire Repair Outfits.
Burt, J. H. Mfg. Co., Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.,

Tools.
Athol Machine Co., Athol, Mass.
Besly, C. H. & Co., Chicago, Ill.
Brown, R. H. & Co., New Haven, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls, Millers Falls Co., 93 Reade, N. Y.
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
Stevens J., Arms & Tool Co., Chicopee.
Tuck Mfg. Co., Brockton, Mass.
Tower & Lyon, 95 Chambers St., N. Y.

Tools, Blacksmith and Wheelwright.
Butts & Ordway Co., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg., Co., Greenfield Mass.

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Schneider & Trenkamp Co., Cleveland, O.

Tote Boxes.
Clark, W. J. & Co., Salem, O.

Trouser Guards.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Trowels.
Bishop, Geo. H. & Co., Cincinnati, O.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.

Trucks.
Boston & Lockport Block Co., Lockport.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N.Y

Tubes, Seamless Drawn Copper, Brass and Bronze.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phœnix Tube Co., Brooklyn, N. Y.

Tubing, Steel.
Leng's, John S. Son & Co., 4 Fletcher St.
National Tube Wks. Co., McKeesport, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.

Twist Drills.
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.

Typewriters.
Wyckoff, Seamans & Benedict, St. Louis, Mo.

Upholsterers' Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Turner & Seymour Mfg. Co., Torrington.

Valves, Gas, Water and Steam.
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
Crosby Steam Gage & Valve Co., Boston.
Eastwood Wire Mfg. Co., Belleville, N. J.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
Wood, R. D. & Co., Philadelphia, Pa.

Vehicles.
Parry Mfg. Co., Indianapolis, Ind.

Ventilating Fans.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton St., N. Y.

Vises.
Athol Machine Co., Athol, Mass.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
Lewis Tool Co., 44 Barclay St., N. Y.
Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Tower & Lyon, 95 Chambers St., N. Y
Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn

Wagons.
Shipman, Bradt & Co., De Kalb, Ill.

Washers.
Haskell, Wm. H. Mfg. Co., Pawtucket, R.I.
Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson & Smith, Worcester, Mass.

Washing Machines.
Brammer, H. F. Mfg. Co., Davenport, Ia.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weaners.
Carroll Muzzle Co., Carroll, Iowa.

Well Supplies.
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N.Y.

Whistles.
Mossberg Wrench Co., Attleboro, Mass.

Wind Mills.
Flint & Walling Co., Kendallville, Ind.

Window Cord.
Samson Cordage Works, Boston, Mass,

Window Fasteners.
Stanley Works, New Britain, Conn.

Wire.
Cleveland Wire Spring Co., Cleveland, O.
Dillon-Griswold Wire Co., Sterling, Ill.
Indiana Wire Fence Co., Crawfordsville, Ind.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Exley Wire Works Co., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods.
Brooks, M. S. & Sons, Chester, Conn.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hendee Wire Brush Co., Milwaukee, Wis.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

Wire Drawing Machinery,
Morgan Construction Co., Worcester,
Mossberg & Granville Mfg. Co., Providence, R. I.

Wire Forming Machinery.
Adt, John & Son, New Haven, Conn.
American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.

Wire Mats.
U. S. Wire Mat Co., Decatur, Ill.

Wire Nails.
American Steel & Wire Co., Chicago, Ill.
Indiana Wire Fence Co., Crawfordsville,
Milwaukee Tack Co., Milwaukee, Wis.
Pittsburgh Wire Co., Pittsburgh, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton.
Whitney, A. R. & Co., 29 Broadway, N.Y.

Wire Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

Wire Parts.
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American Steel & Wire Co., Chicago, Ill.
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Washburn & Moen Mfg. Co., Worcester,
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel.
Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wood Screw Machinery.
Cook, Asa S. & Co., Hartford, Ct.

Wood Working Machinery
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches.
Bonney Vise & Tool Co., Phila., Pa.
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Star Mfg. Co., Carpentersville, Ill.
Tower & Lyon, 95 Chambers St., N. Y.
Williams, J. H. & Co., Brooklyn, N. Y.

Zinc Nails.
Phillips E. & Sons, So. Hanover, Mass.

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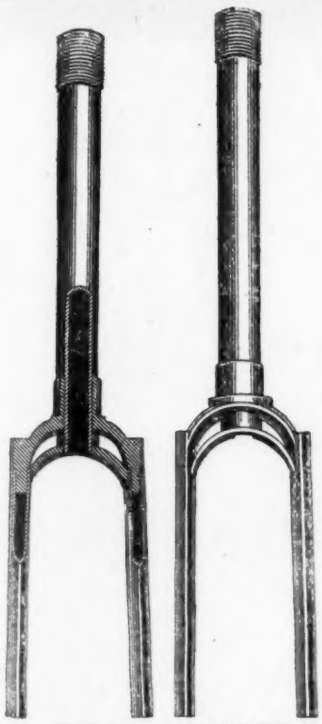

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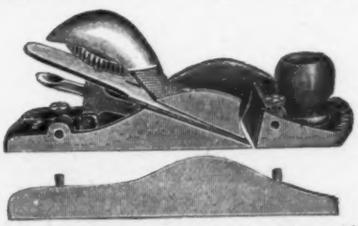

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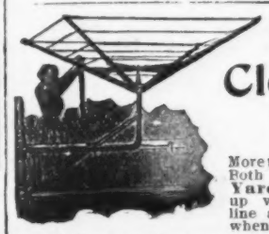

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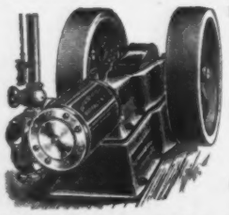
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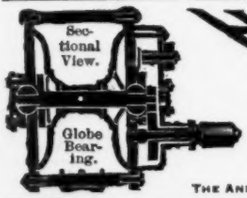

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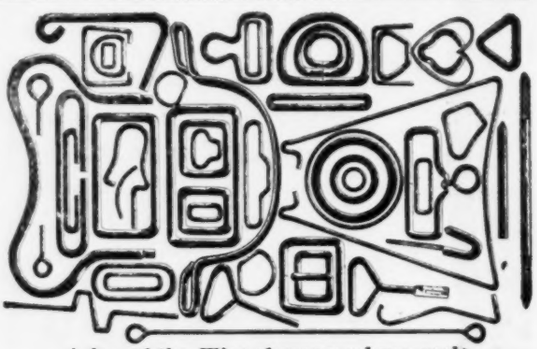

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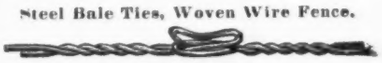

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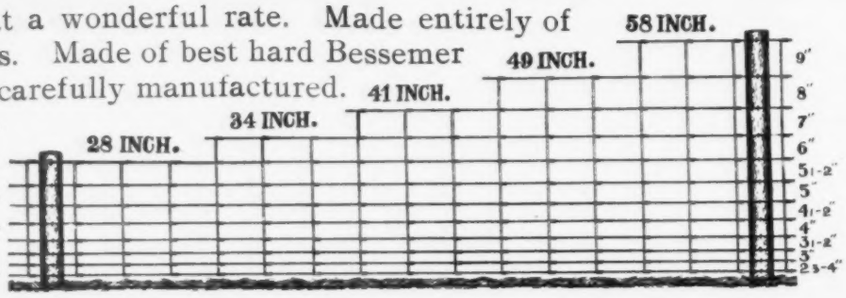

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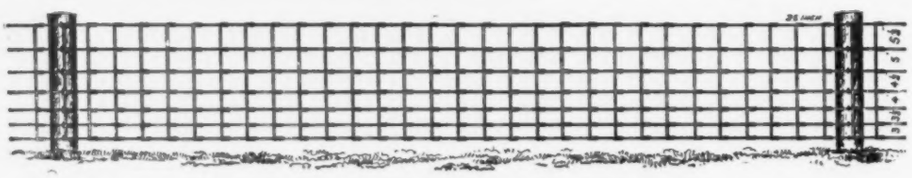

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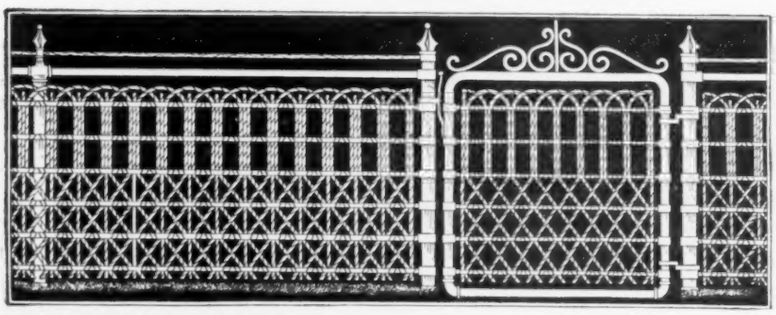

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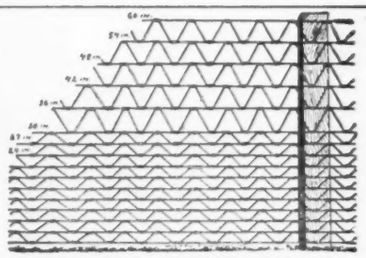

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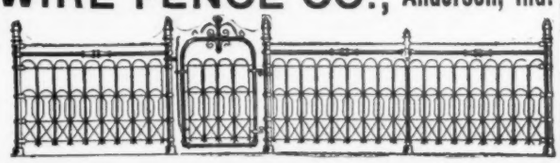

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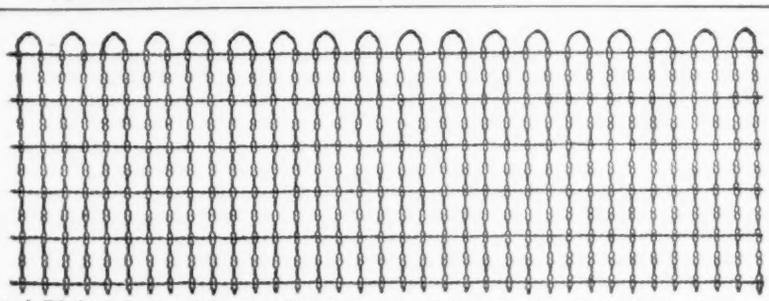

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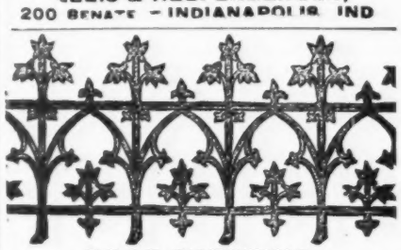

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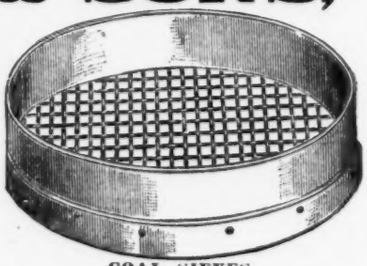
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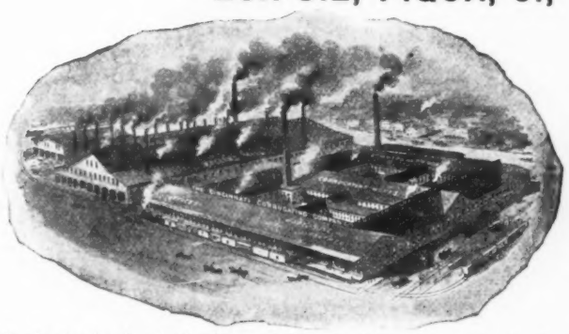

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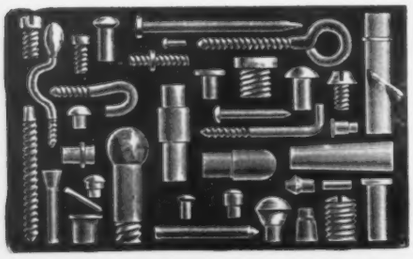

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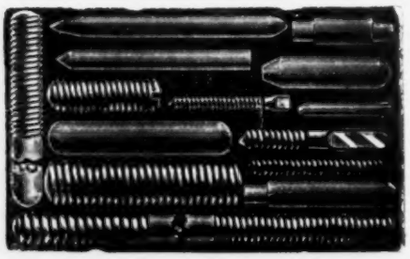

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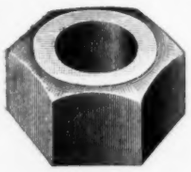

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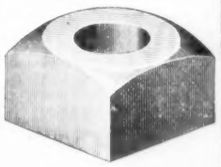

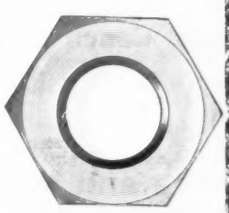

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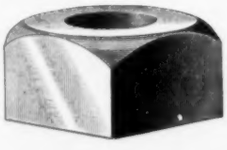

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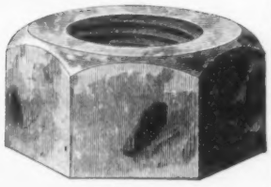

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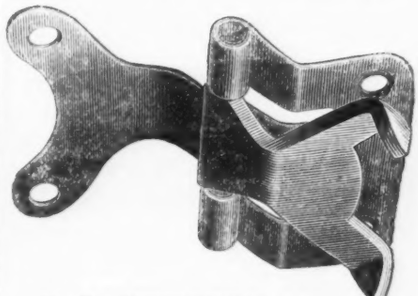

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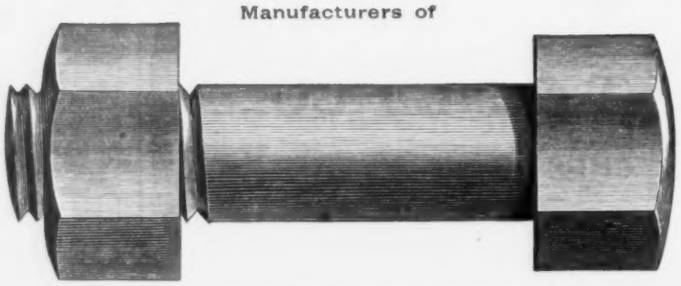

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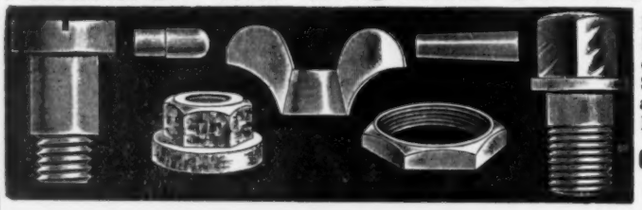

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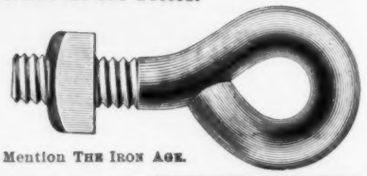

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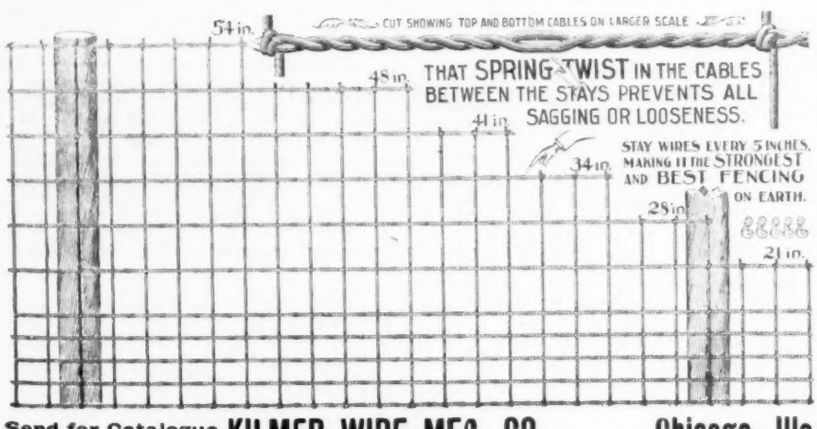

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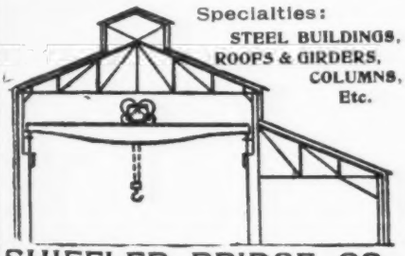

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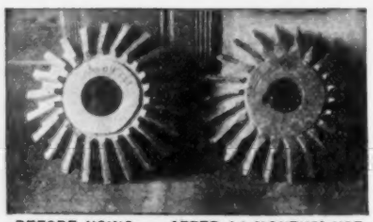

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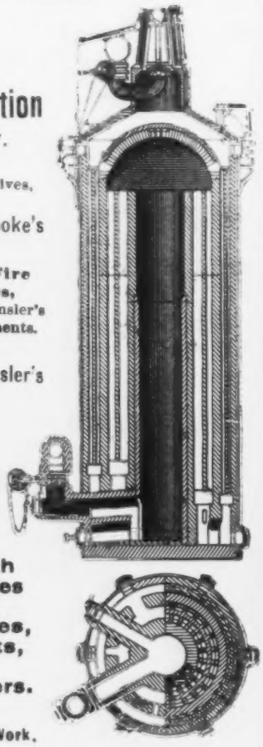

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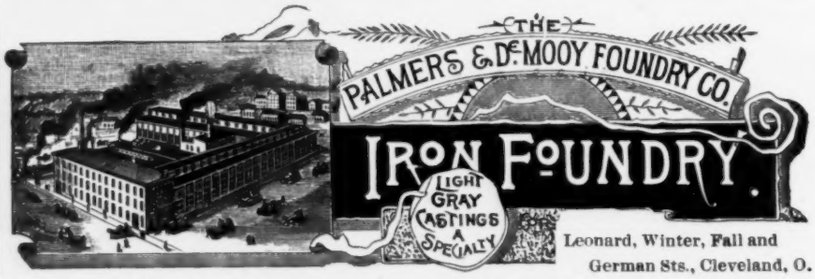

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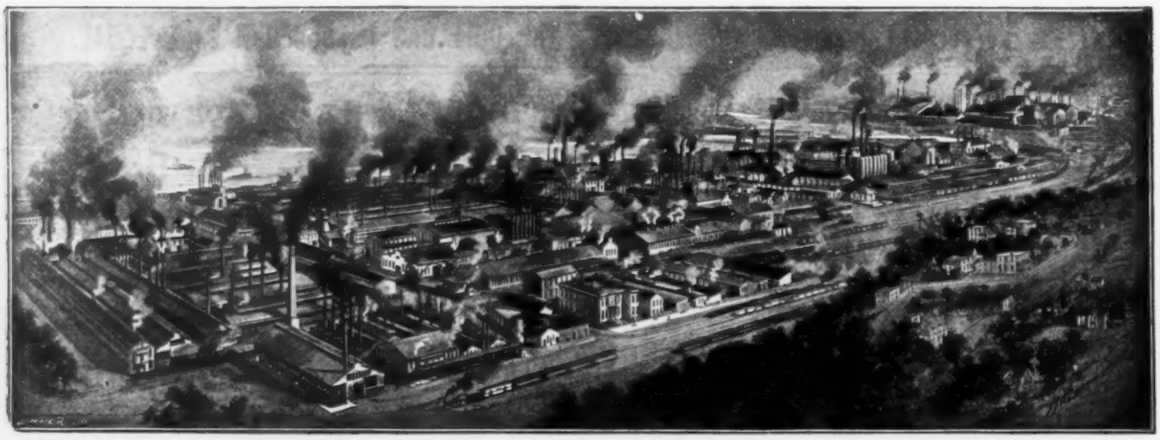

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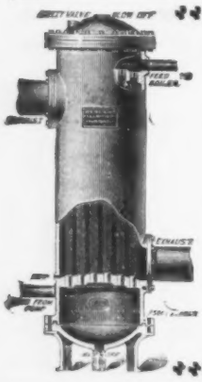

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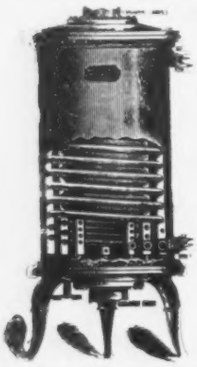

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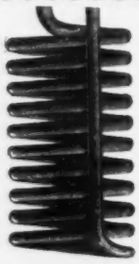

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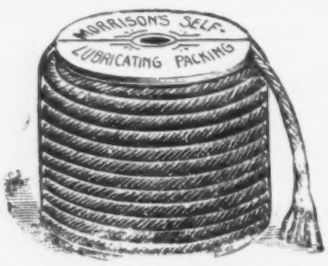

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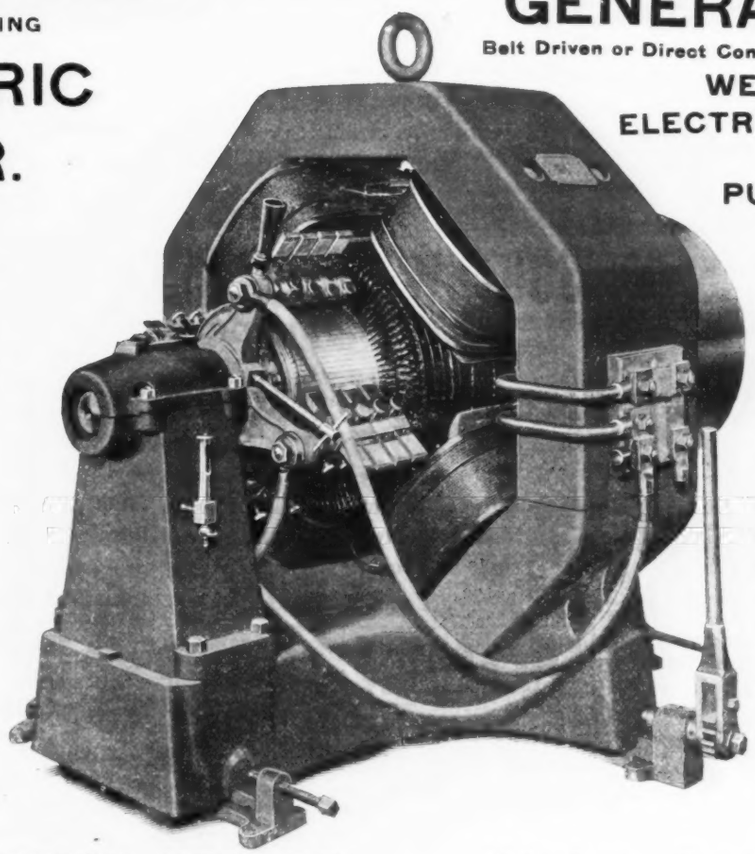

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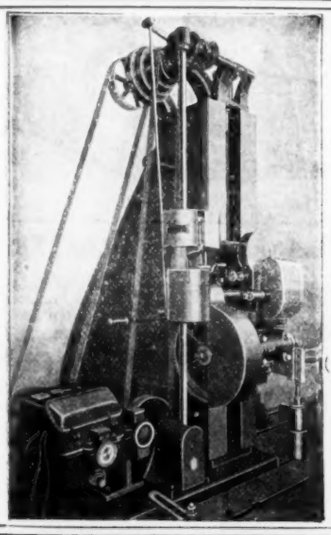

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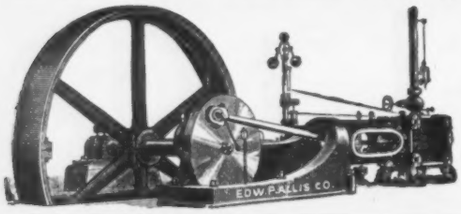

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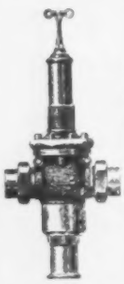

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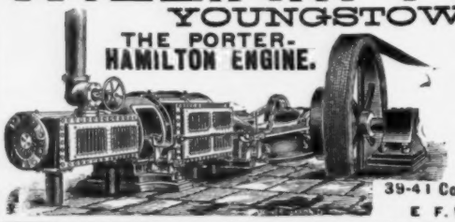

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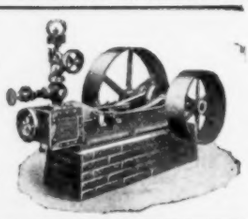

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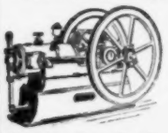

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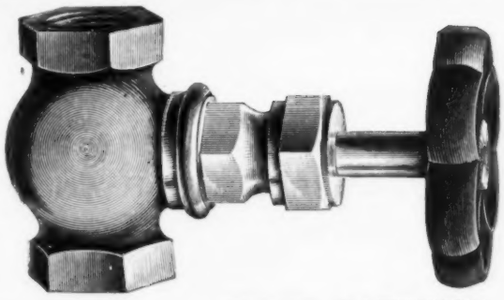

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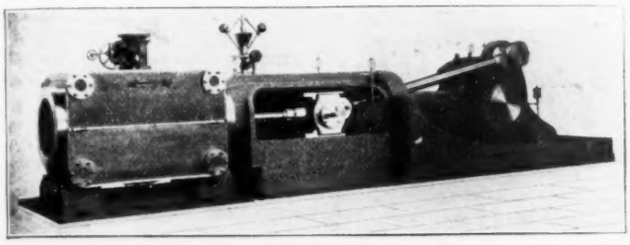

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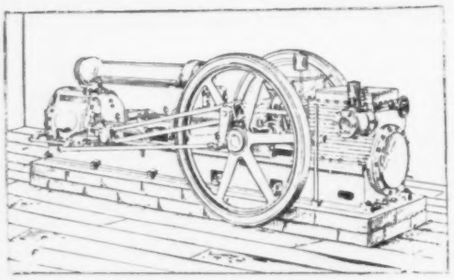

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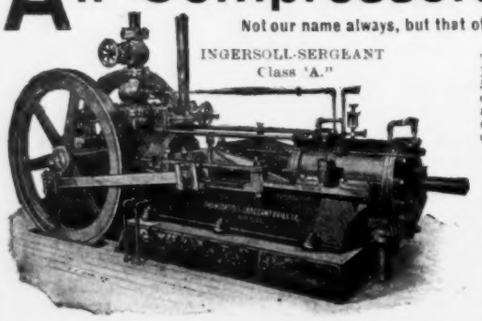

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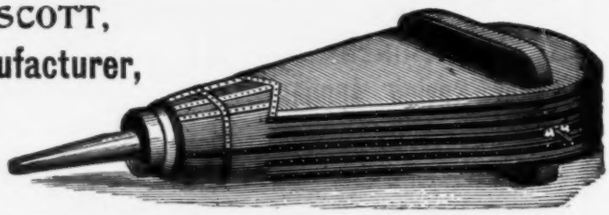

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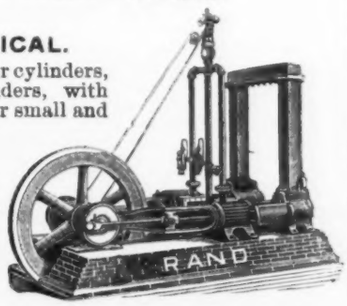

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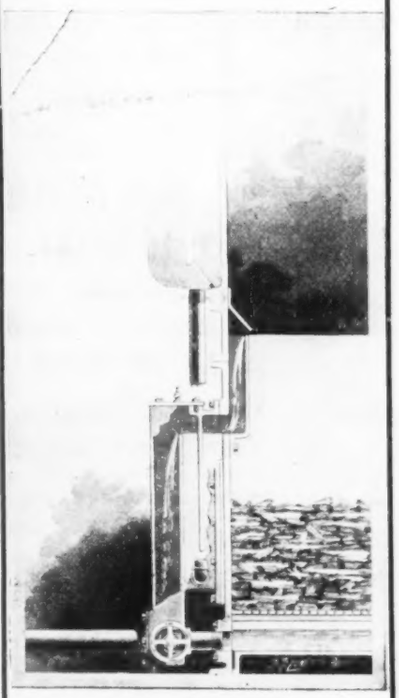

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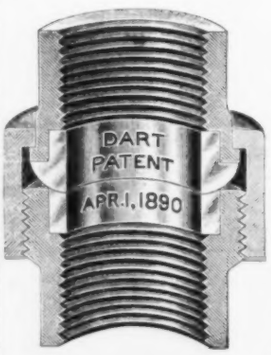

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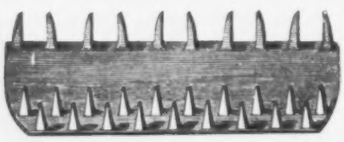

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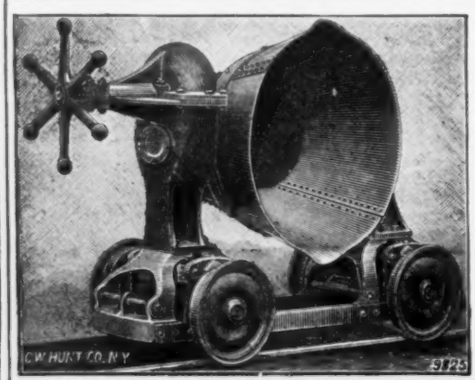

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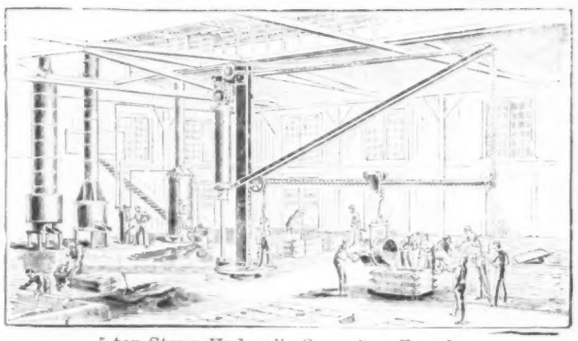

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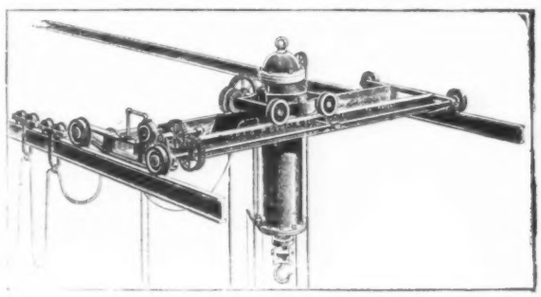

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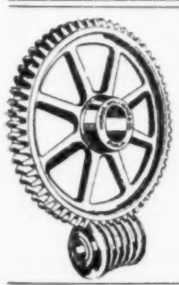

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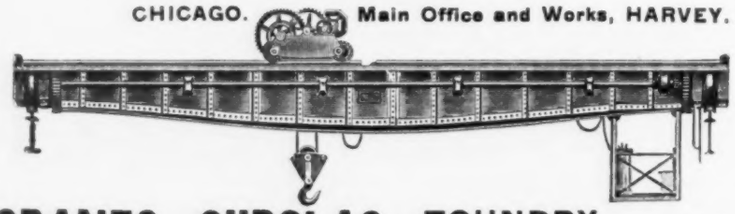

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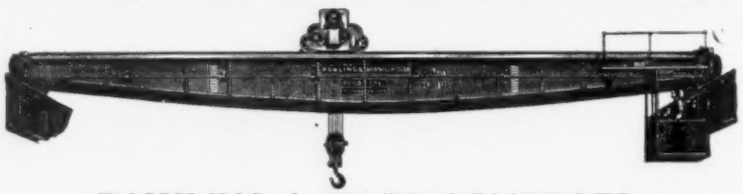

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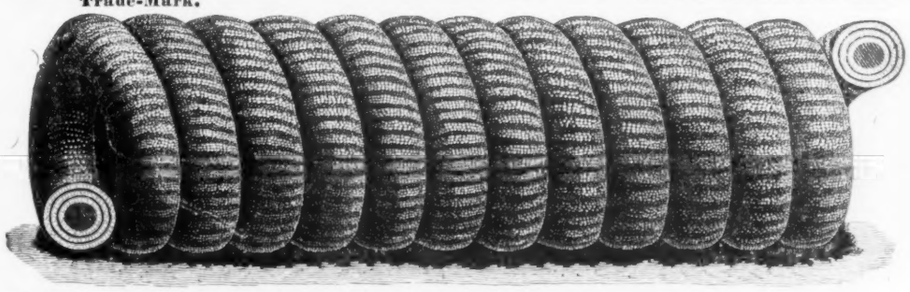

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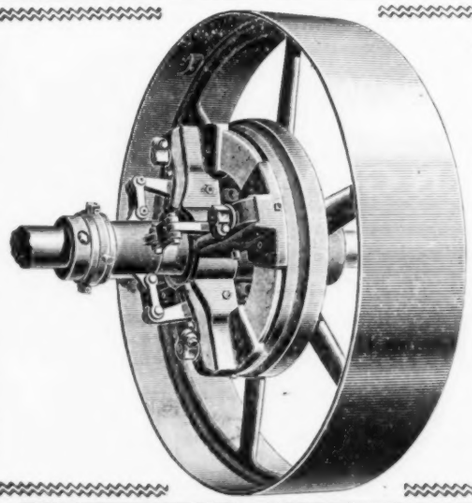

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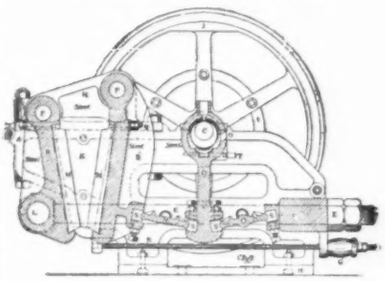

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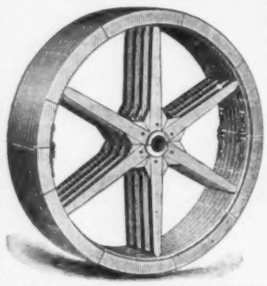

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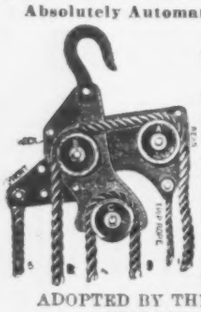

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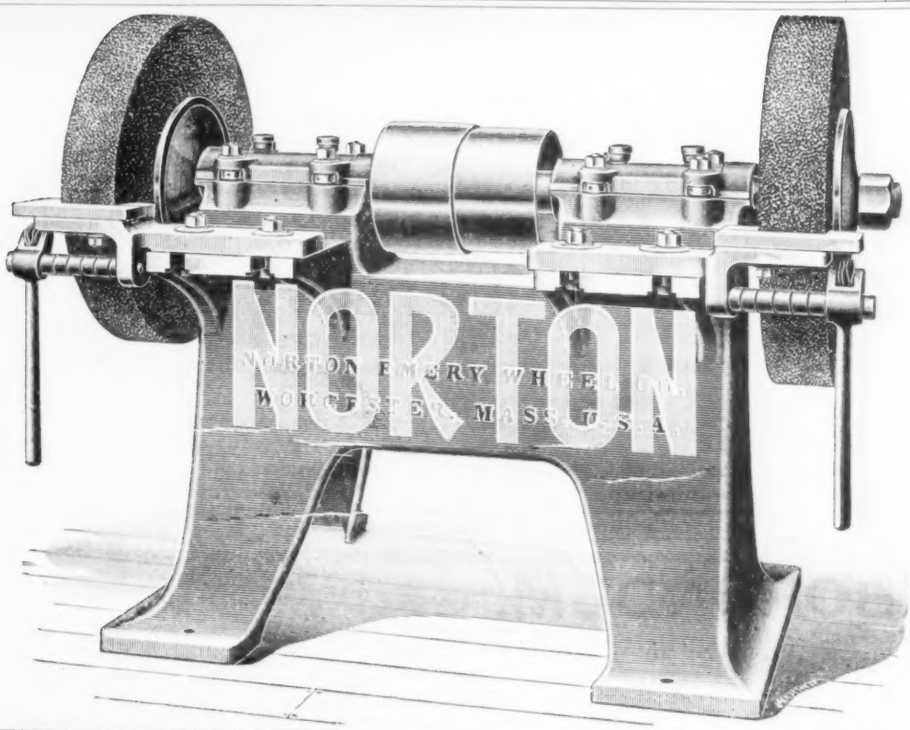

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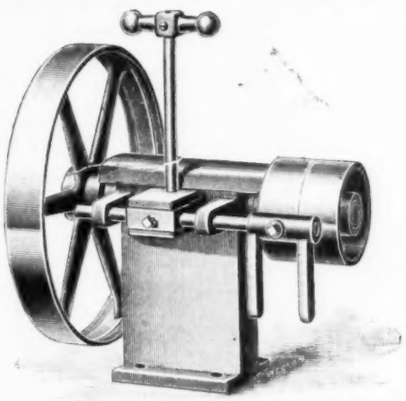

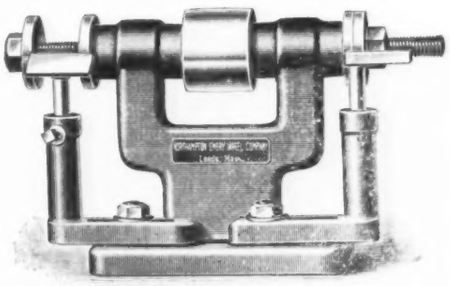

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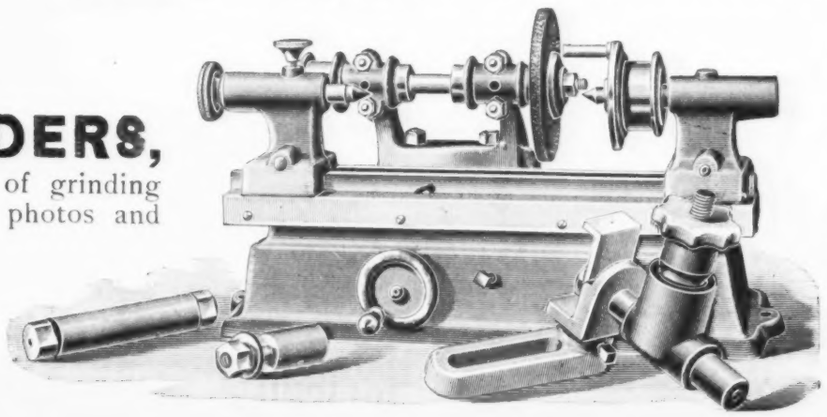

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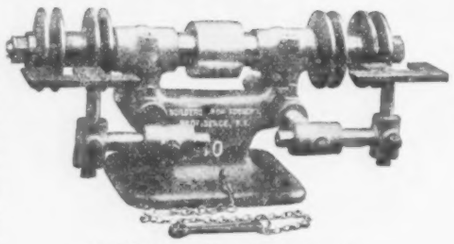

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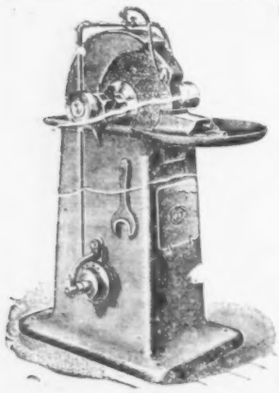

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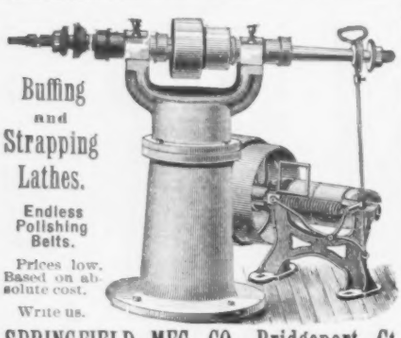

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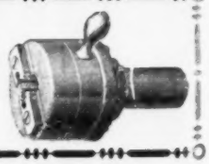

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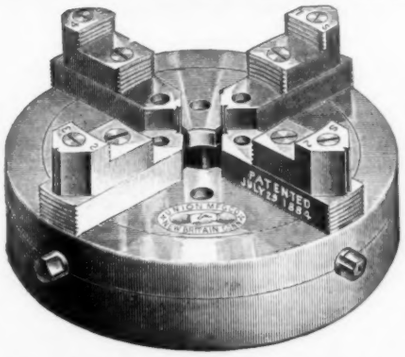

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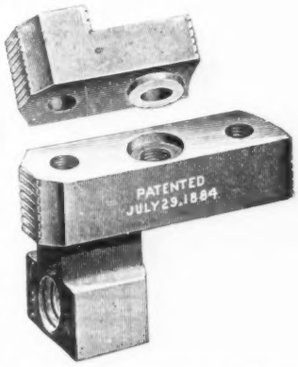

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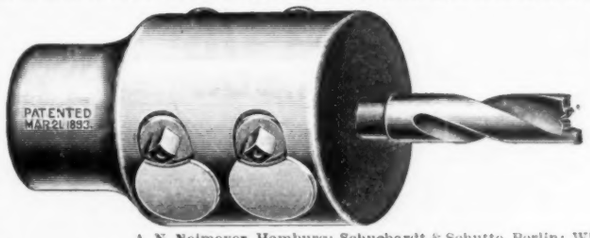

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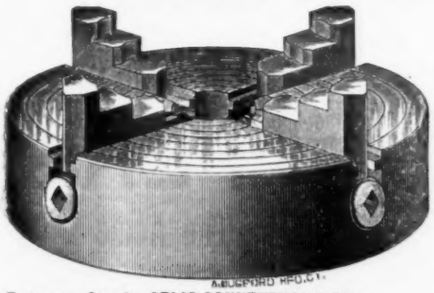

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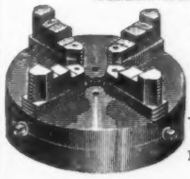

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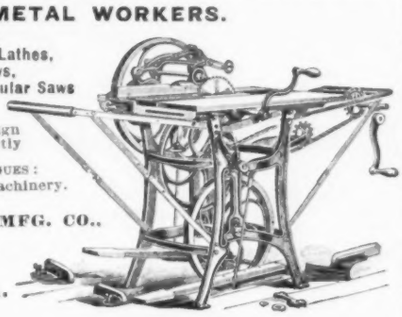

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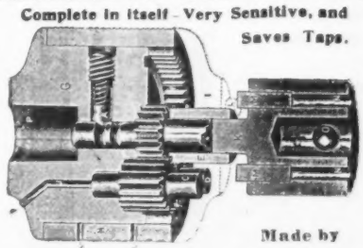

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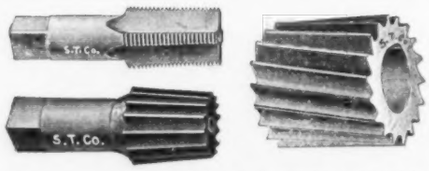

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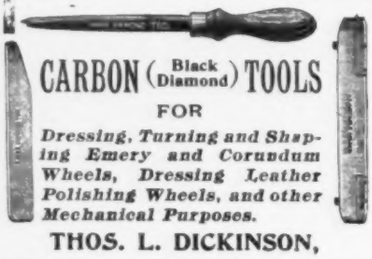

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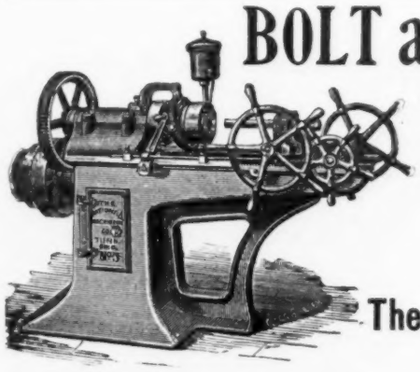

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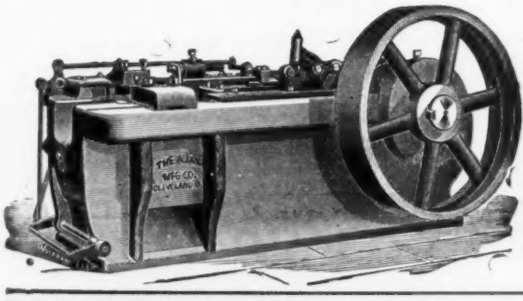

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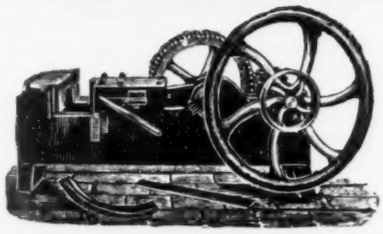

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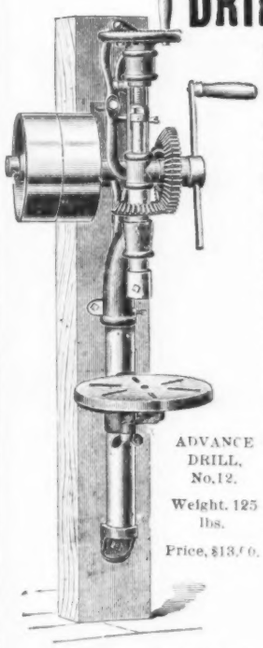

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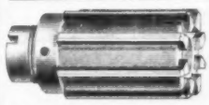

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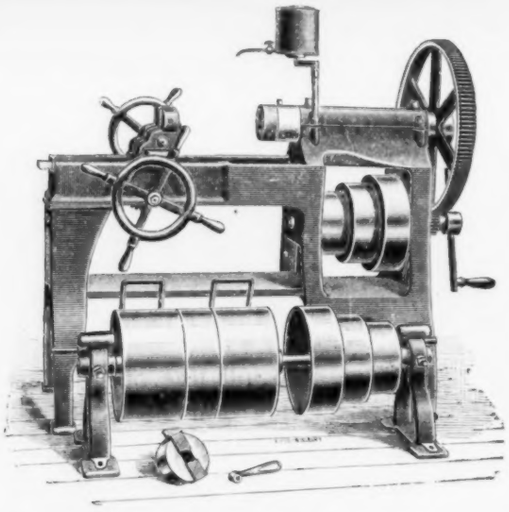

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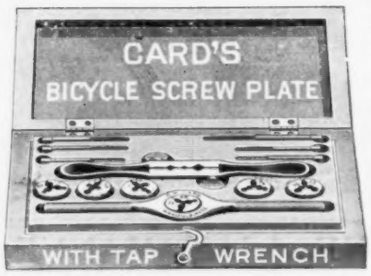

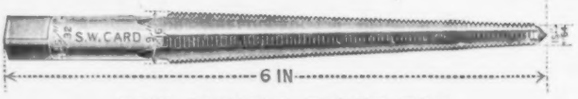

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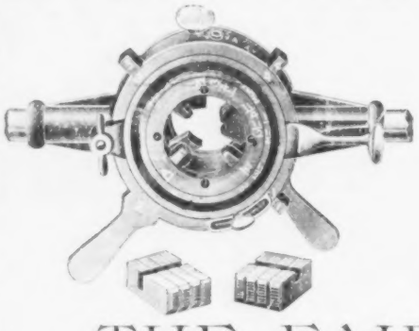

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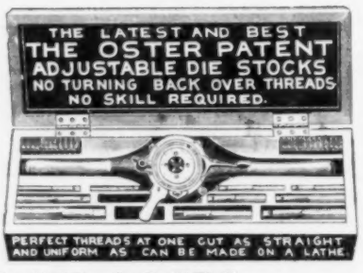

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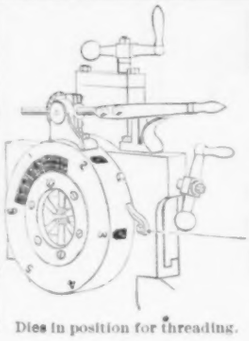

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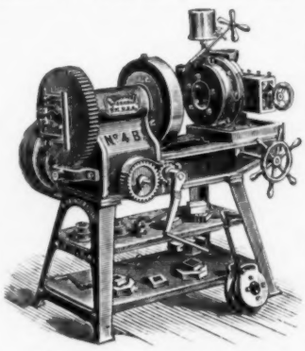

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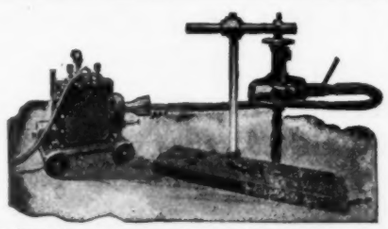

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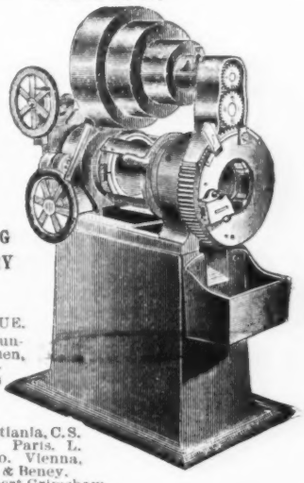

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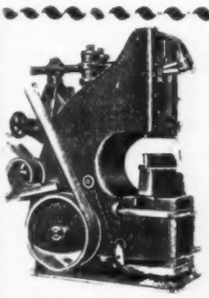

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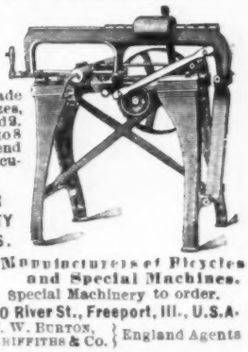

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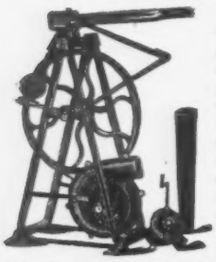

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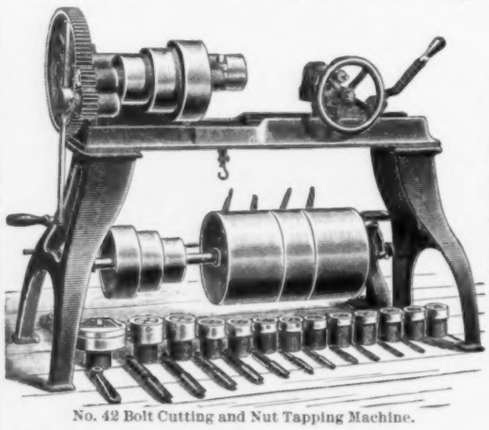

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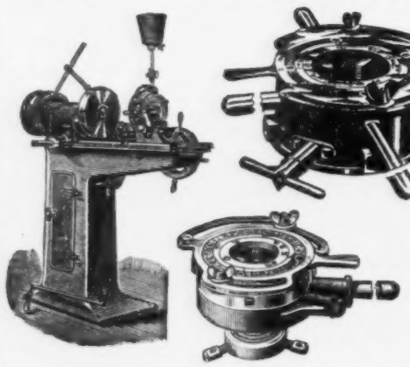

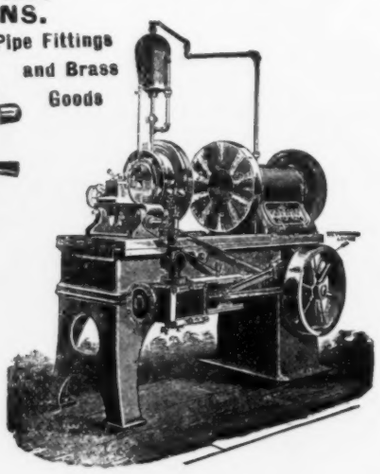

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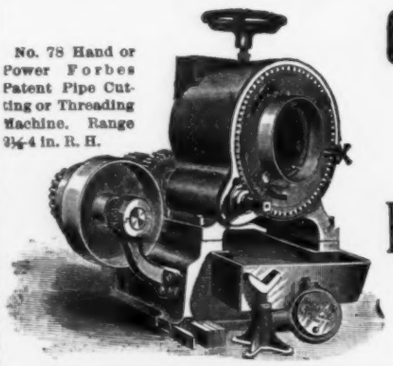

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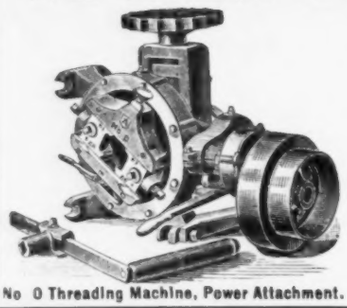

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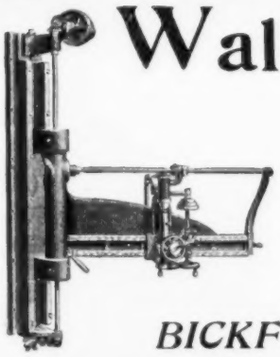

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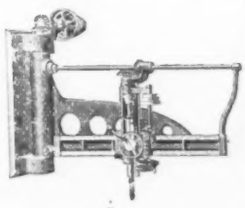

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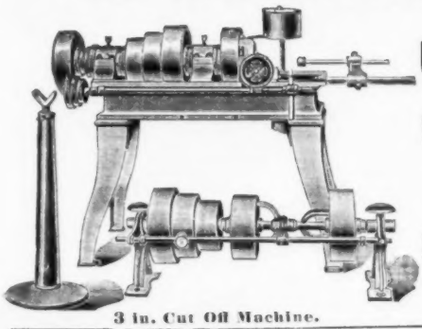

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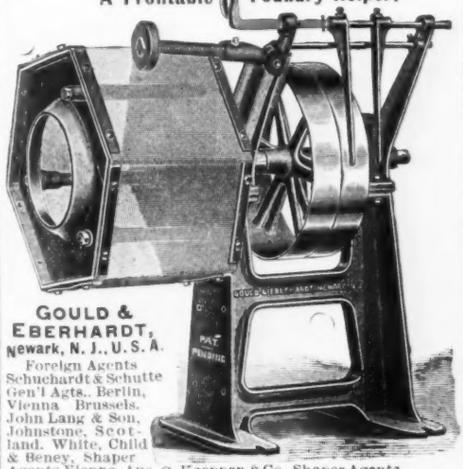

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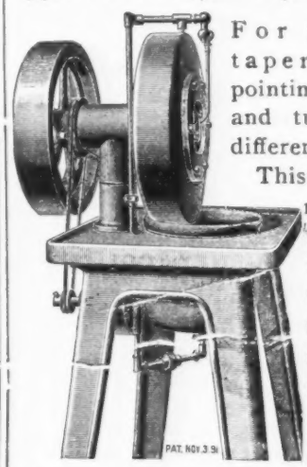

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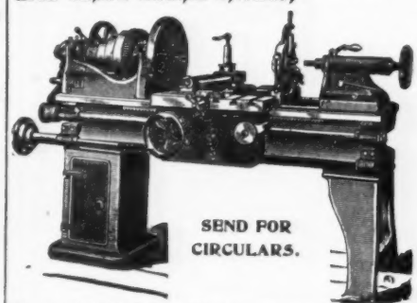

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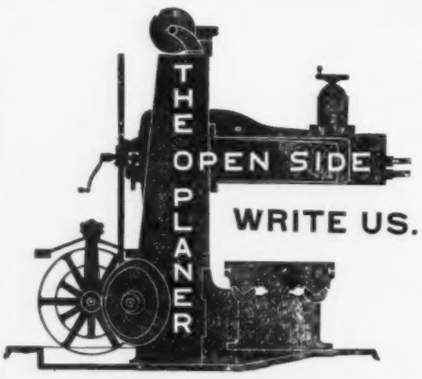

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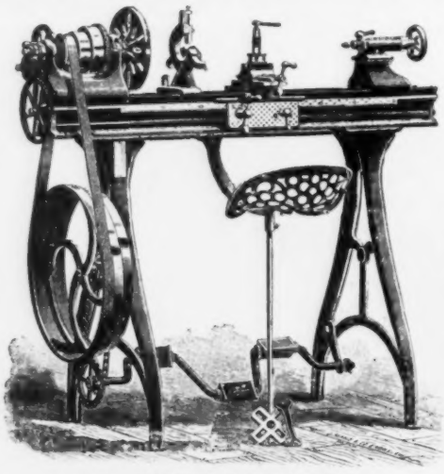

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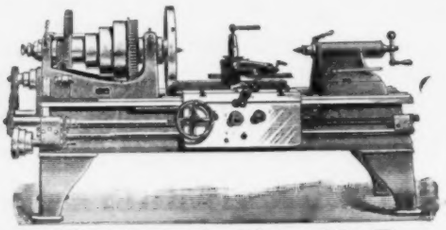

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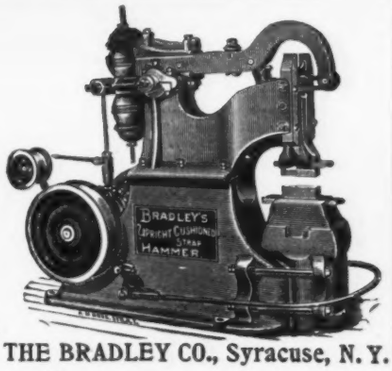

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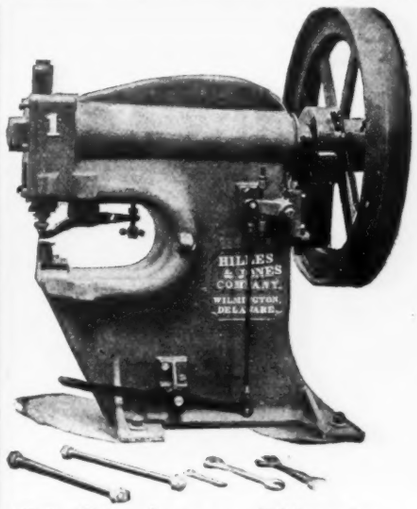

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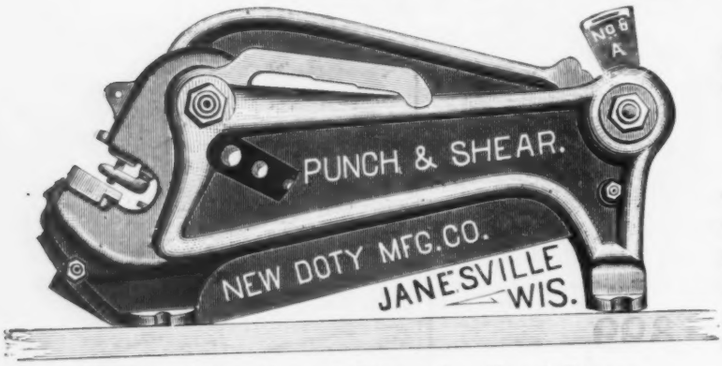

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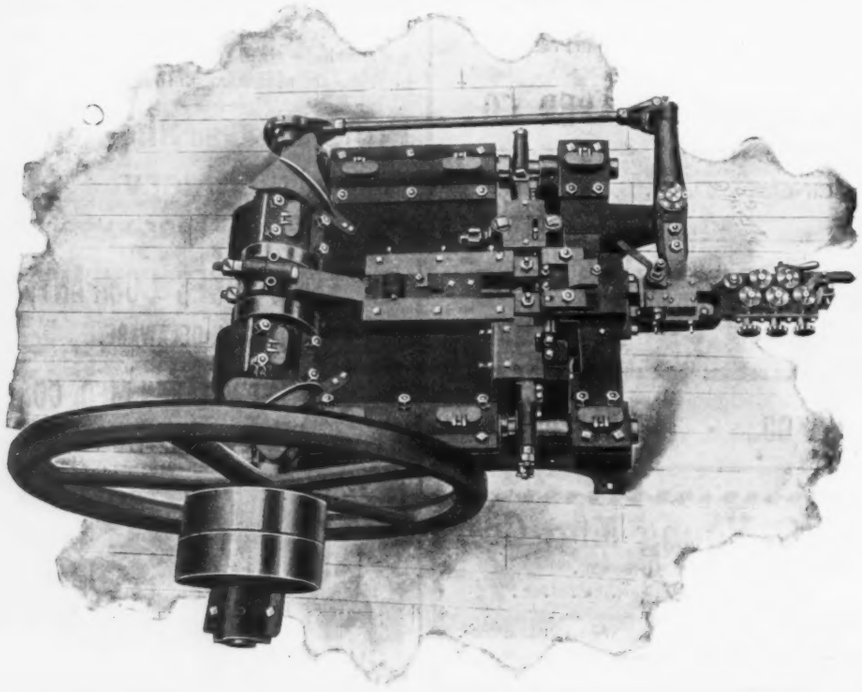

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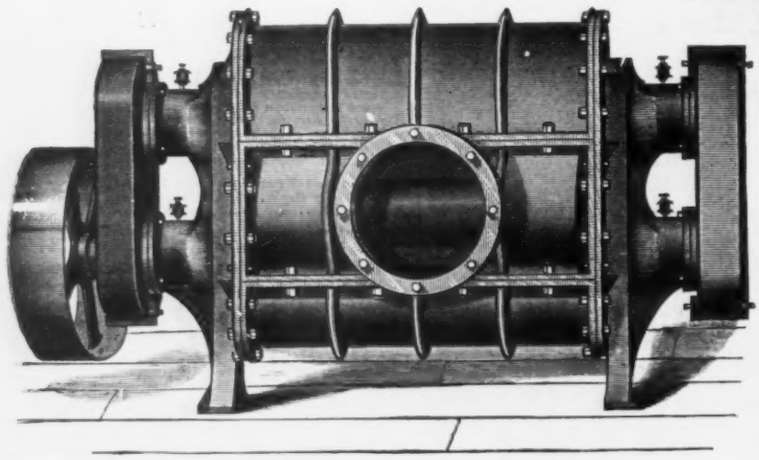

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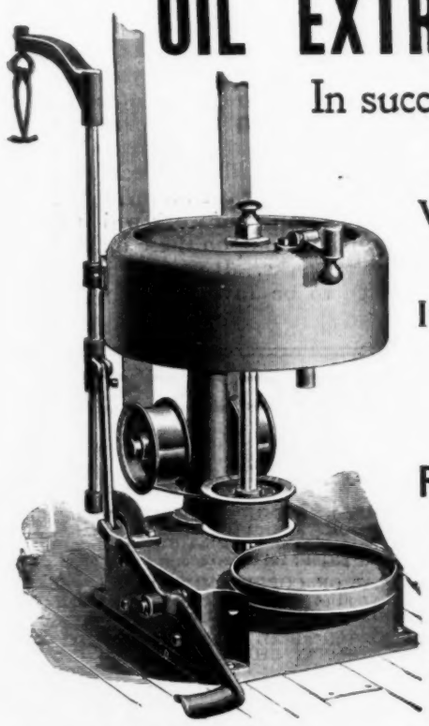

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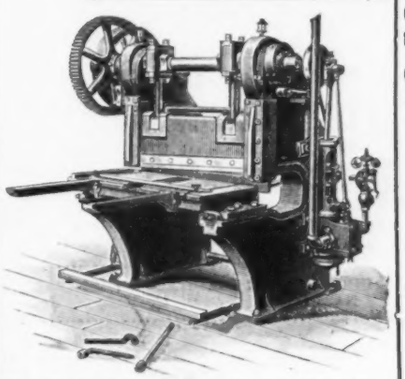

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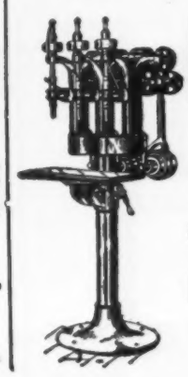

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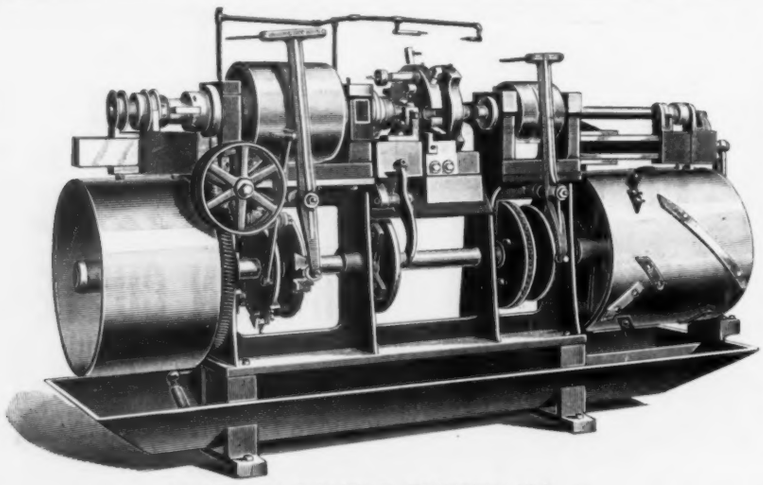

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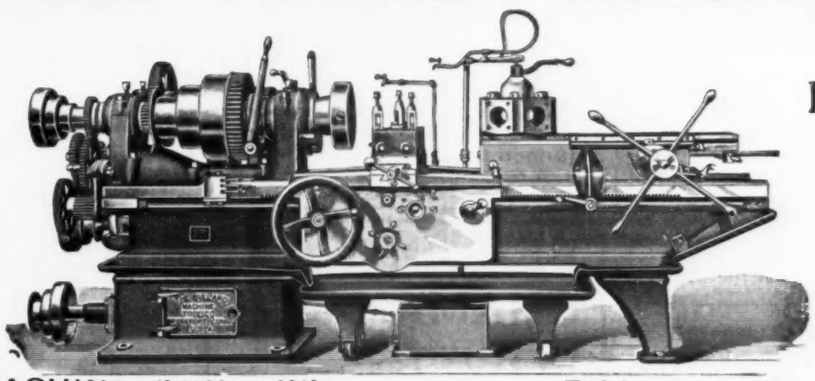

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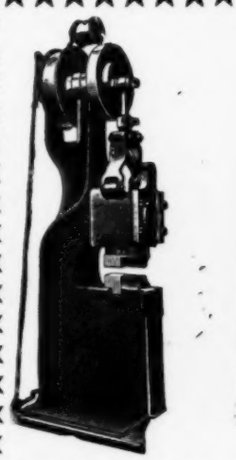

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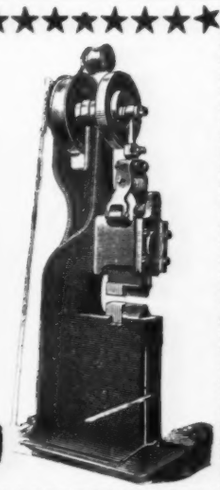

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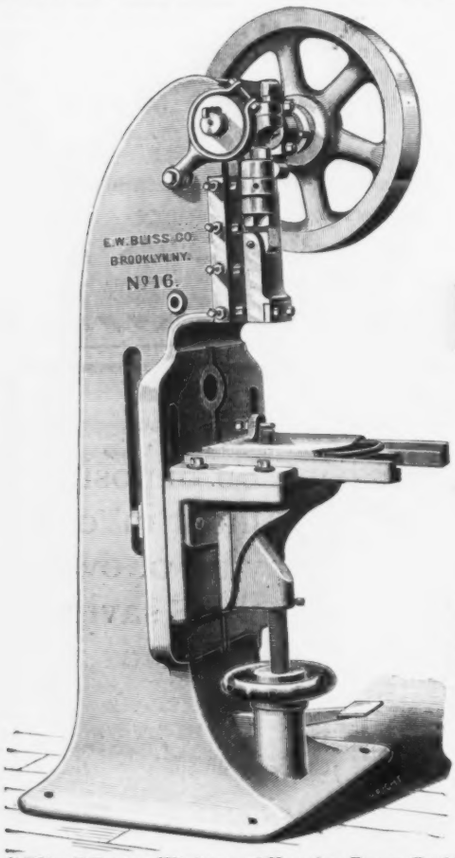

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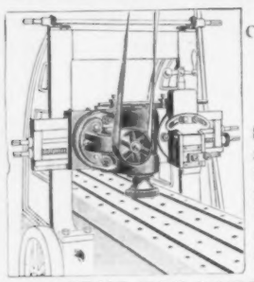

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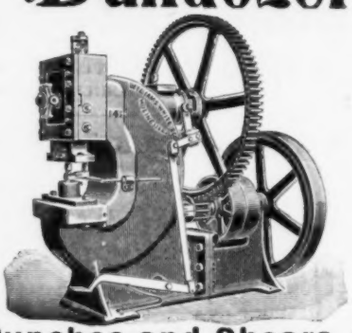

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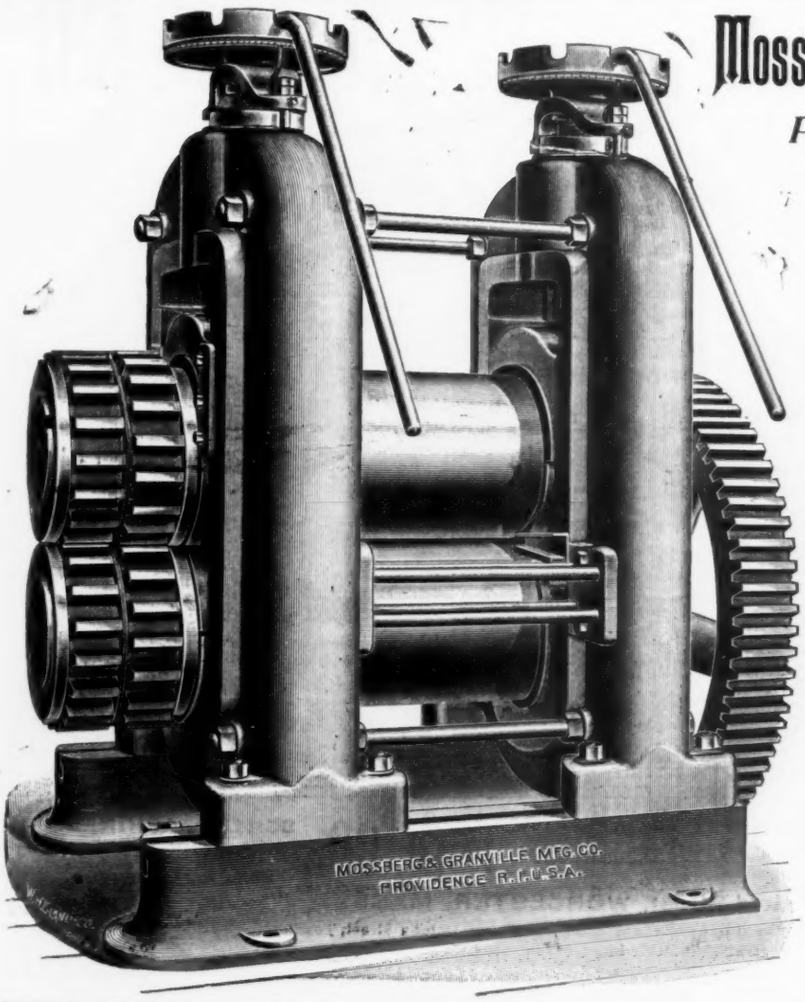

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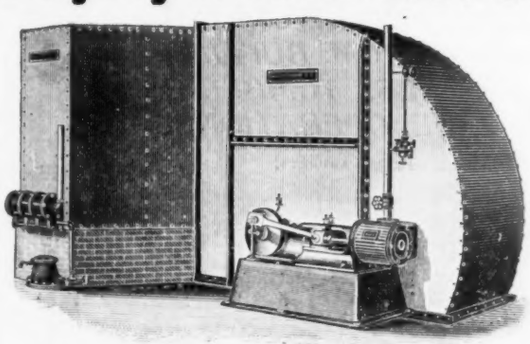

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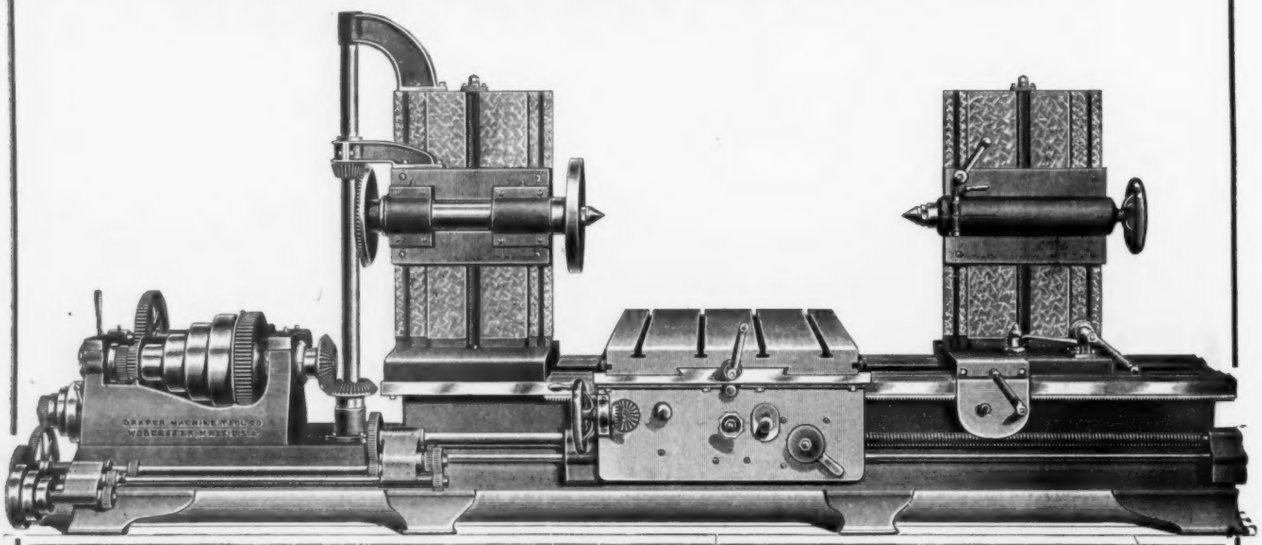

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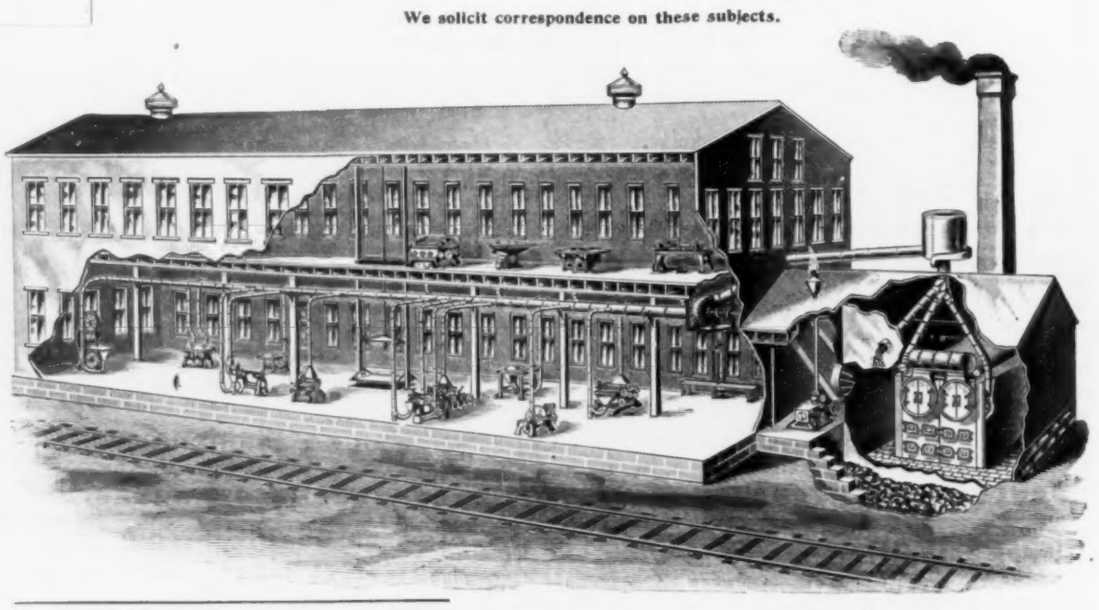

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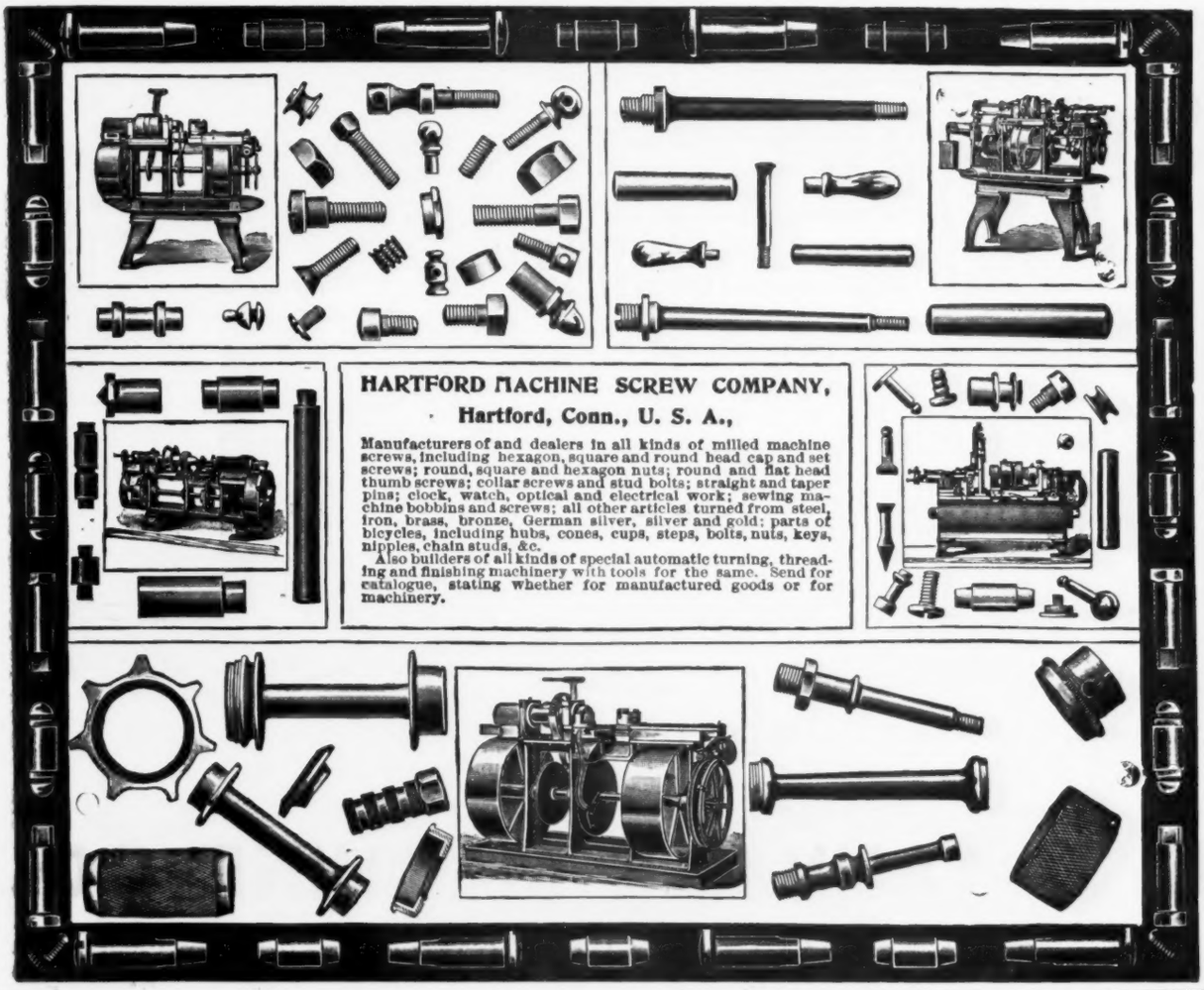

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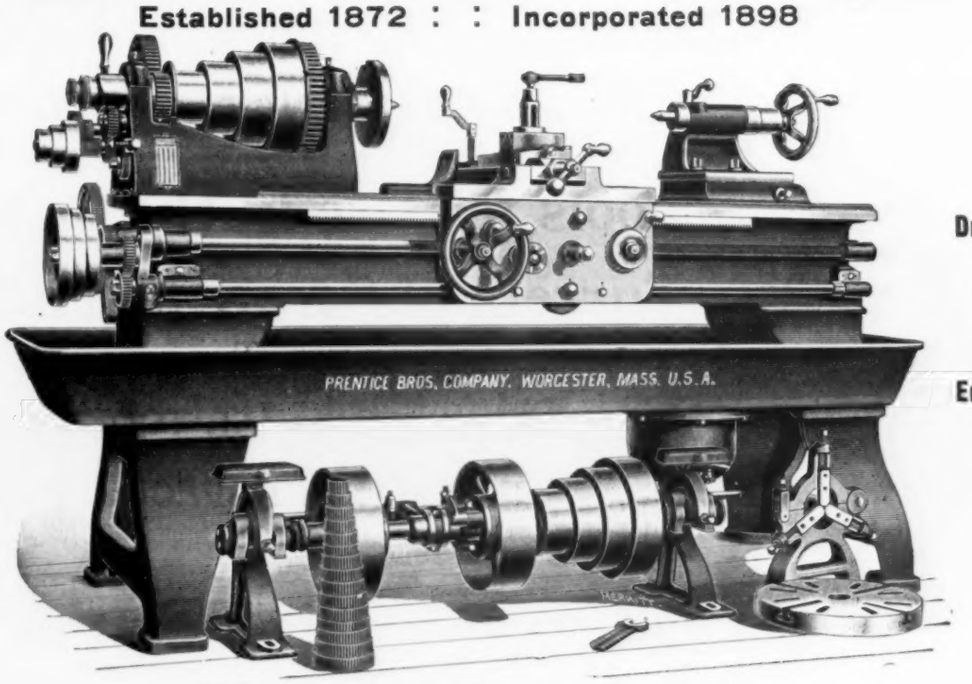

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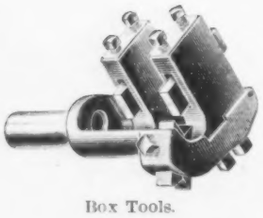

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One 11 foot, in halves. 10 tons weight. One 8½ foot solid, 13¼ tons weight. Both made by Providence Corliss Co.

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Large lot Blacksmiths' Tongs and special tools.
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LOCATED NEAR NEW YORK CITY.

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FOR SALE, CHEAP.

1 24 x 48 Corliss, with 18 ft. Band Wheel, 40 in. face.
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1 54 in. Bement Boring Mill.
1 42 in. Radial Drill.
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150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.

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(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
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(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

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No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 40 ft., 8 heads.

Shapers.
9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.
24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,

136-138 Liberty St., New York City.

MILLING MACHINES.

Second-Hand.

1 No. 1 Cincinnati Universal Miller, power feeds, latest pattern.
3 No. 2 Brown & Sharpe Plain Millers, A1 condition.
3 sets Brown & Sharpe Plain Milling Machine Centers.
5 No. 1 Cincinnati Plain Milling Machines, good condition.
3 Prentiss Hand Millers.
1 No. 1 Garvin Universal Milling Machine.
3 Garvin Lincoln Pattern Milling Machines.
1 Ames Lincoln Pattern Milling Machine.
1 Pratt & Whitney Cam Milling Machine.
1 Special Rim Milling Machine.
1 Beaman & Smith Duplex Milling Machine, fine condition.
1 Two-spindle Ames Profiler.
1 No. 2 Becker Miller with Rotary Table.
2 No. 5 Becker Vertical Millers with automatic feeds, fine condition.
1 No. 3 Hilles & Jones Vertical Miller, 36 in. table.

Agents for Cincinnati Milling Machine Co.
Agents for Whitney Milling Machines.
Send for January list of new machinery.
Send for January list of second-hand machinery.

Marshall & Huschart Machinery Co.,

Chicago Office, 62-64 So. Canal St.
Cleveland Office, 19 So. Water St.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. 2, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $350 each. Numerous machines not mentioned for want of space.

C. R. BIGELOW, 45 Dey St., New York City.

ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg Co. known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place,
Philadelphia, Pa.

A Few Special Bargains in Second-hand Machinery.

8 Higley No. 2 Cold Sawing Machines all complete and in fine order.
Lee & Hunt Cold Saw, with engine attached.
No. 3 Stiles Press, 1¼ in. stroke.
No. 4 Waterbury Press, 1¼ in. stroke.
50 lb. Bradley Strap Hammer, fine order.
600 lb. Bement Steam Hammer.
200 lb. Barrows Steam Hammer.
90 lb. Ferris & Miles Steam Hammer.
60 in. Bement Vert. Boring Mill
48 in. Bickford Vert. Boring Mill.
7 ft. table Newark Horiz. Boring Mach., P. C. F., 3½ bar, table facing attachment complete and has power lift. Can also be used as a milling machine.
33 in. Car Wheel Borer.
11 in. Putnam Slotter.
13 in. " "
¼ in. Adt Style "B" Riveting Mach. with c'shaft
Adt Wire Straightening and Cutting-off machine.
8 ft. Betts Bending Rolls
50 in. Williams & Rich Gear Cutter.
48 in. Hughes & Phillips Gear Cutter.
2-spindle Whiton Centering Machine.
2 spindle P & W. " "
2 2-spindle Brown " "
2 in. Bement Bolt Cutter.
1½ in. Merriman Bolt Cutter, auto. opening.
No. 1 Diamond Univ. Grinder.
Cinti. Cutter and Reamer Grinder.
16 ft. Hilles & Jones Plate Planer.
3 H. P. Westinghouse Motor, new.
50 new Standard Grinders, various sizes.

Also a large assorted stock of both new and second hand Lathes, Planers, Drills, Milling Machines, Shapers, Screw Machines and other tools in stock for quick delivery. Send for complete lists.

Write us for anything you need.

PRENTISS TOOL & SUPPLY CO.,
603 D. S. Morgan Bldg., Buffalo, N. Y.
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FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE!!

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MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

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Bought and Sold.

IRON TANKS FOR SALE. All Sizes.

WM. ECKBOLDS' SONS,
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For Sale Cheap.

A triple-plunger, geared Hydraulic Pump, good as new; used only a few months. Will be sold cheap.

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ONE ALDRICH PLANER FOR SALE.

24 in. x 24 in. x 6 feet. In good running order. Price very low.

HURLBUT-ROGERS MCH. CO.,
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2D-HAND BERRYMAN HEATERS, all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

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Metal-Working Machinery

At Bargain Prices.

Lathes.

One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ⅜ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
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Branches at Chicago and Pittsburg.

LOCOMOTIVES FOR SALE.

One Porter Narrow Gauge 36 in. Locomotive with tender, complete, only $450. Wt. 20,000 lbs., size 8 in. cylinder x 14 in. stroke, 4 Drivers, Boiler guaranteed for 110 lbs. Engine first-class.

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One 42 in. gauge Locomotive, saddle tank, cyl. 7 in. x 12 in., 4 Drivers. Also 9 Iron Coal Dump Cars 42 in. gauge, good as new.

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Second-Hand Machinery.

1 54 in. x 22 ft. Pond Engine Lathe, triple back geared.
1 32 in. x 14 ft. Wright Engine Lathe.
1 30 in. x 14 ft. Fifield Engine Lathe.
1 24 in. x 16 ft. Fish Engine Lathe.
1 24 in. x 12 ft. Lodge & Davis Engine Lathe.
1 54 in. x 54 in. x 20 ft. Hercules Planer.
1 36 in. x 36 in. x 9 ft. Pond Planer.
1 No. 4 Cincinnati Universal Miller.
1 No. 2 Brown & Sharpe Universal Grinder.
1 No. 70 Crosby Power Press.

Also numerous other smaller tools, shafting pulleys, hangers and belting, all in fine condition.

Write for complete list.

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Important.

First-class new manufacturing property to let. Most substantial brick buildings, high ceilings, many windows, Engine, Boiler, line shafting, steam heat, draughting room, three offices, large lot. Four trunk lines railroad. Daily boats. 1½ hours from this city by railroad. Suitable for any business. Will alter to suit tenants. Strikes unknown. Have plan of property. Address

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FOR SALE.

One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes.
31 x 108 in. Plate Mill, Roughing Rolls, 28 x 84 in., live tables.
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Pair 36 x 40 in. Horizontal Reversing Engines.
1 18 in. Bar Mill.
2 10 in. 3-high Bar Mills.
Engines, Shears, Roll Lathes, 20 Boilers.
Blowers.
One 10 ton Locomotive Crane.
One 2 ton Locomotive Crane. Both standard gauge.
Supply and Hydraulic Pumps.
Large lot of other machinery such as used in a large steel works.

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Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

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One No. 4 Root's Blower, in perfect condition, which has been replaced by larger one of same make.

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BARGAINS IN MACHINE SHOP EQUIPMENT.

Rare opportunity for concerns equipping new plants or adding to present facilities to secure Shafting, Hangers, etc., Standard Small Tools in great variety. Special Bicycle Machinery and Tools. General line of equipment and Supplies used in bicycle factory. All in first-class condition. Send for catalogue. Something in the lot sure to be of interest. Owners retiring from business. Address

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SHEARS

Suitable to cut 4 in. Steel Billets cold.
MERRILL BROS., Brooklyn, N. Y.

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36 in. x 28 ft. Betts Engine Lathe
36 in. x 14 ft. New Haven " "
24 in. x 12 ft. " " " " Old style.
24 in. x 8 ft. Phillips " "
16 20 x 5 ft. Bullard " "
16 in. x 5 ft. " " "
10 in. x 4 ft. Prentice " "
21 in. x 7 ft. Lodge-Davis Turret Lathe.
15 in. x 5 ft. A. T. & M. Co. Fox Lathe.
30 x 30 x 7 ft. New Haven Planer.
26 x 26 x 9 ft. " " "
24 x 24 x 6 ft. " " "
4 ft. Wall Drill.
36 in. Gould & Eberhardt Gear Cutter.
48 in. Pulley Borer.
19 in. Putnam Slotter.
No. 7 Sturtevant Monogram Blower.
Two No. 8 Sturtevant Monogram Blowers.
45 in. Buffalo Pressure Blower.
100 lb. Merrill Bros. Air Cushioned Hammer.
15 in. Hendey Shaper.
24 in. " "
10 in. Allen Air Compressor and Tank.
2-Spindle Profiler.

And a Large Stock of New Tools.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower, No. 5. All in good order.

The THOMAS LAUGHLIN COMPANY
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All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

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AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business.
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Has a column 13 inches diameter by 13 feet high and drills a hole in the center of a 13 feet circle. Is a modern tool, universal type, and as good as new.

Address
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Established jobbing and retail hardware business in good business town of Northern Ohio. Best of reasons for selling. A fine opportunity for some one. Address

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See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

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Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

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Metals Wanted.

We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

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Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

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We Have For Sale

2 150 h. p. Babcock Wilcox Boilers, with first joint connections.
1 18 h. p. Gasoline Engine.

ALL IN FIRST CLASS CONDITION.

FRANK SAMUEL,
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ENGINE.

Vertical, 16 in. x 18 in. cylinder, in first-class order, complete. Price, $475.00.

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Shell, 56 in. dia., 34 Tubes, 5 in. x 15½ ft. Price, $150.00.

Further information desired on application to

JAMES LEFFEL & CO.,
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Jan. 6, 1899.

Two Electric Lighting Companies in the City of Beloit, Wis., having been consolidated and converted into a Water Power Plant, the following list of machinery has been thrown out of use and is for sale. None of it is over four years old, some of it used but little and the best of it, such as the Engines are as good as new. It will be disposed of cheaply to quick buyers for cash. Inspection and correspondence solicited:

1 60 H. P. Hor. Engine, 8 in. x 14 in. cylinder. Manufactured by John T. Nove Mfg. Co., Buffalo.
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1 220 H. P. Williams Engine, 15½ in. x 30 in. cylinder.
1 160 H. P. Corliss Engine, 14 in. x 32 in. Manufactured by Hoffman & Billings Mfg. Co.
1 Brownell full front Boiler, 53 in. x 14 ft., pattern No. 70.
1 Root full front Boiler, 70 H. P.
1 Excelsior Iron Works Boiler, 5 ft. 3 in. x 12 ft., full front.
1 Taplin Rice & Co. Boiler, 5 ft. 6 in. x 15 ft., full front, Pumps, Injectors, Governors, Shafting, Floor Stand, Pulleys, Belt Tighteners, Belting, etc., etc. Apply to the

BELOIT ELECTRIC CO.,
BELOIT, WISCONSIN.

BEMENT BORING MILL.

1 54 in. Bement Boring and Turning Mill.
1 12 in. Bement Slotter.
1 5 ft. Full Universal Radial Drill.
1 Gisholt Tool Grinder.
1 12 in. Turret Lathe.
1 16 in. x 6 ft. Ames Lathe.
1 Heavy Grinder.

All good as new.

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Safe Works,
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Copper Rolling Mill,
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Coal Mines,
Foundries, Machine Shops,
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All kinds of machinery, new and second-hand, at very reasonable prices.

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The Chicago, Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y,
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FOR SALE.

About 1,500,000 lbs. Steel Plates,
from ¼ in. to 1½ in. 4 ft. x 22 ft. Very best material, low phosphorous.

500,000 lbs. Iron Tank Plates
⅛ in. thick, 2 ft. 6 in. x 7 ft.

About 120,000 lbs Steel Bars
4 in. to 8 in. x ¼ in.

Large lot Angles and Channels, 3 Stacks, 40 ft. x 36 in. x 3-8 in.

The above material is all new, coated with one coating of paint, and was in use in the lately demolished Gas Holder of the Consolidated Gas Co., 21st Street and Ave. A, New York, where it may be inspected.

Also 1 50-ton hoist,
with Engine and Blocks complete. Correspondence solicited.

H. A. HITNER'S SONS,
Gaul & Sergeant Sts., Philadelphia.

FOR SALE OR LEASE.

Manufacturing Plant, Bank Street, Cincinnati. Specially constructed of brick. 150 ft. x 100 ft. Four stories. High ceilings. Light on all sides. Boiler, Murphy Furnace, Engine, Shafting, Heating. All complete.
Apply to

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An Iron Merchant with large established business in the North of England, and having a practical knowledge of the trade, wishes to represent American Manufacturers of Pig Iron and Rolled Steel of all kinds in Great Britain Address first letter to "30/63," care *Ironmonger*, 42 Cannon St., London, England

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At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c. to J. Stewart Walker, Court's Agt., Lynchburg, Va.

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Having valuable experience in handling Export business as a freight broker, and being in daily intercourse with the various steamship lines leaving New York, would be pleased to correspond with parties desiring their Export Shipments efficiently looked after.

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PERMANENT EXHIBITION

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NEW YORK. BOWLING GREEN BLDG.

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An old established Hardware Business, the best stand in New England. For particulars inquire of

BALDWIN, ROBBINS & CO.,
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FOR SALE CHEAP.

Blowing engine suitable for blast furnace. Size of steam cylinder 24 x 36; size of blowing tub 73 in. Built by well known maker; in use but 12 months. Guarantee condition almost equal to new. Will sell at a low price if sold at once. Address "ENGINE," office of *The Iron Age*, 232 William Street, N. Y. City.

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One 60 in. x 60 in. x 12 ft. Planer, fitted with two heads on cross rail, side heads on both housings. The latter to have power feeds. Arrange the side heads to cut from 5 to 4 ft. Cross rail to be operated by power. Planer to have improved reversing gear with a return of about 80 ft. per minute.

One 48 x 48 x 12 ft. planer, fitted as above described. Propositions will be considered on new or second hand planers within the range of above sizes.

Address, "PLANER," 58 Central Avenue,
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For Sale.

One heavy Screw Cutting back and faced geared Lathe, 52 in. swing, 22 ft. bed, with cross and straight feed.
One Planer, 33 in. x 12 ft. table.
Address

JOHN WOOD MAN'F'G CO.,
Conshohocken, Pa.

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of Blast Furnace, Rolling Mills and Wrought Iron Tube Works belonging to Estate of James Hooven, deceased. Will be sold at Norristown, Pa., on Wednesday, Feb. 8, 1899, at 2 P. M. For further particulars address

JOHN W. SCHALL,
WM. C. STOKES,
Executors.

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Successors to
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Large stock always on hand.
☞ Send for list of Second Hand Machinery.
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SCRATCH CLOTH

for cleaning files and other tools.

WIRE CABLE

in job lots, at very low prices.

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SCRAP IRON and STEEL

In car load lots.
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For Sale.—Relaying Steel Rails.

5,000 tons 56 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first-class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

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FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section, 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.
THE ISAAC JOSEPH IRON CO.,
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WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
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SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.
THE JANSON IRON COMPANY,
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Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

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Providence, R. I.

WANTED.

Scrap Iron and Steel.

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Drop Forge Works, building 40 x 130 ft., all fitted up with modern tools. 3 Drops. 3 Power Presses. Machine Shop. Japanning Plant. Shears. Brick Boiler House. 2 Steel 40 horse-power Boilers. 150 horse-power Engine. Complete Oil-Fuel Plant. Side track in yard, no shifting charges. For information address
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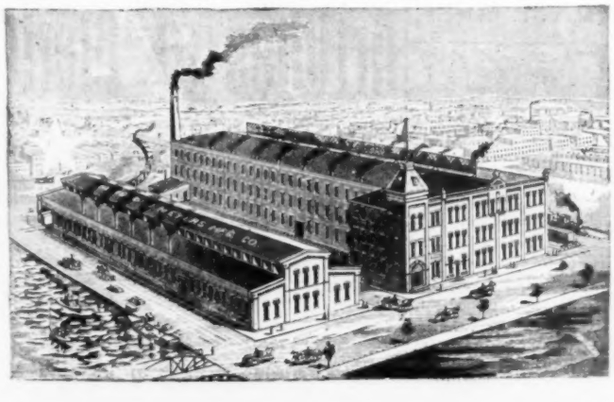

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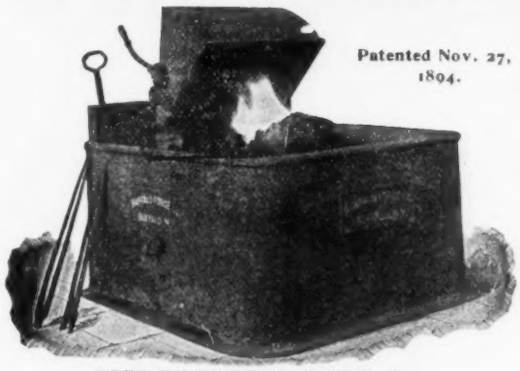

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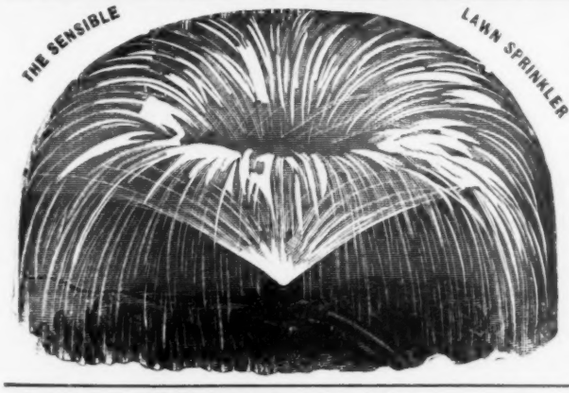

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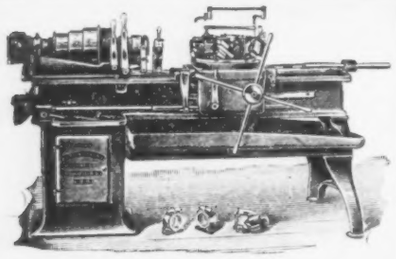

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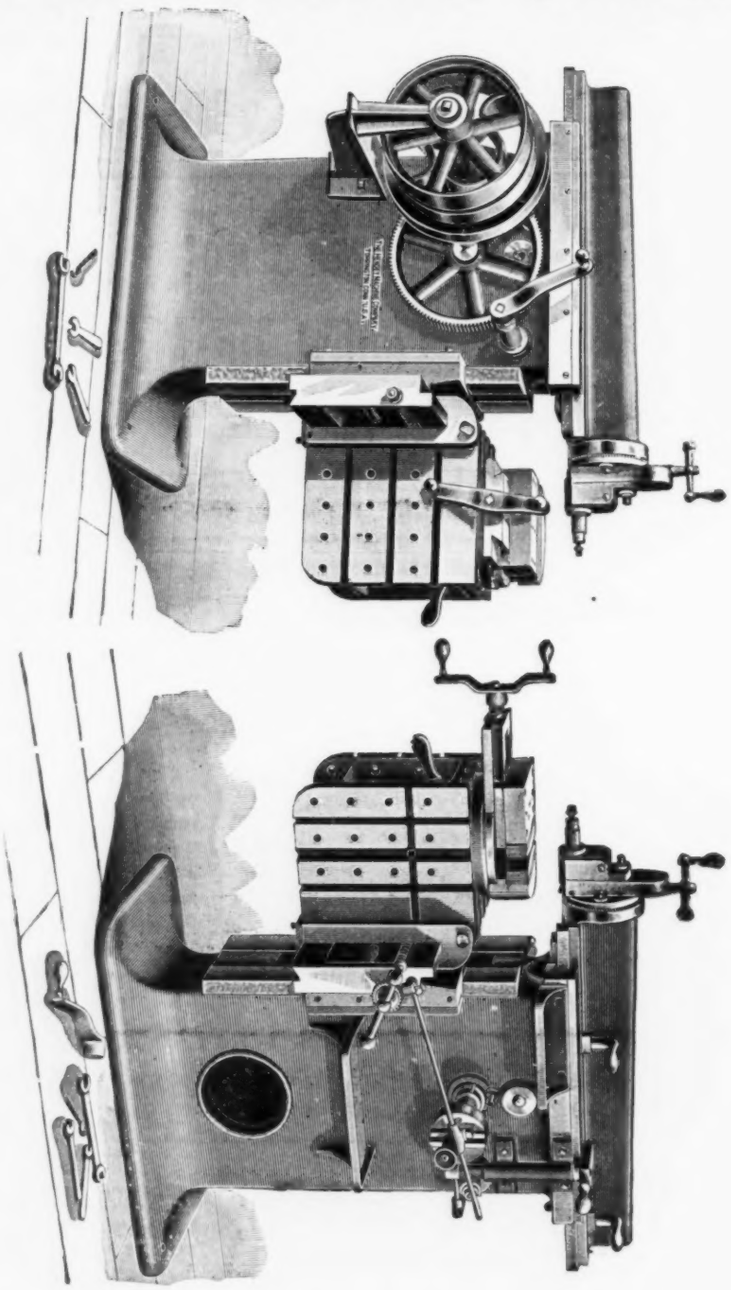

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THE HENDEY MACHINE CO., - Torrington, Conn., U. S. A.

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ICE AND ROLLER
SKATES
WORCESTER, MASS.
CATALOGUE FREE

COVERT'S.
1875 FARMER, 1899
N. Y., U. S. A.
We Lead Them All.

CARY'S BOX STRAPPING.
SOLD IN ALL COUNTRIES.
Made Only By
Cary Mfg. Co.,
NEW YORK.

OURWAY IRON
Equal to Best Swedish and Norway.
ESTABLISHED 1825.
BROWN & CO., INC.,
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EXPORT IRON AND STEEL CO.,
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Codes—A B C 4th EDITION and LIEBER'S.
MANUFACTURERS OF THE
GENERAL OFFICES:
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"Battle Axe" Brand of Steel Hoops, Cotton Ties, Wool Bale Ties, Hinge and Tube Strips, Galvanized Hoops.
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50% more sales can be made by many Hardware Stores if goods are effectively displayed. THE AMERICAN HARDWARE STORE contains 450 pages and 500 illustrations and describes methods employed by the most successful dealers.
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That's why bicycles built of it cost more and are worth more than those constructed of cheaper tubing.
BICYCLE RIDERS, for their own safety, should demand of the manufacturer or dealer a mount made of "SHELBY TUBING;" accept nothing "just as good and a little cheaper."
BICYCLE DEALERS, large and small, should handle lines constructed of "SHELBY TUBING," Why, do you ask? It helps sell your wheels; It gives you a reputation for handling bicycles of the best construction; It helps you make a fair margin of profit on your investment. Excellent reasons, are they not?
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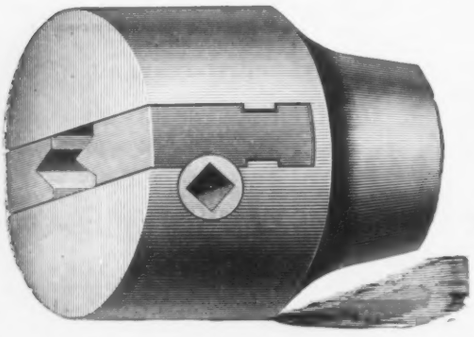

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No. 0 takes any drill from 0 to 1-2 inch inclusive.
No. 1 " " " " 0 " 3-4 " "
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They are the strongest and most durable made. Drill absolutely in the center. No twisting or bending necessary if drill is straight. Can be fitted to hollow spindle lathes for working long rods.

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You take no risk on the quality
We make only the best.

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DURING the past year we have perfected great improvements on our Star Hack Saw Blades, and are now filling orders with a quality which proves, by a very thorough test, to do 50% more cutting and to be 100% stronger than any which we formerly made.

The demand for these goods has steadily increased from the beginning, and we anticipate a much larger sale as soon as the new saws come fully into use. Though the value has doubled the price remains the same.

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MANUFACTURED BY
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SUPERIOR IN QUALITY. **"YANKEE"** INTERESTING IN PRICE.

Spiral Ratchet Screw Driver.

RATCHET SCREW DRIVER—2, 3, 4, 5, 6, 8, 10, 12 IN.
Descriptive Circulars mailed on application.
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The Donoghue Soldering Copper Handle is a good Handle. **TESTED TEN YEARS.**
Made by The Cleveland Rule & Handle Co.,
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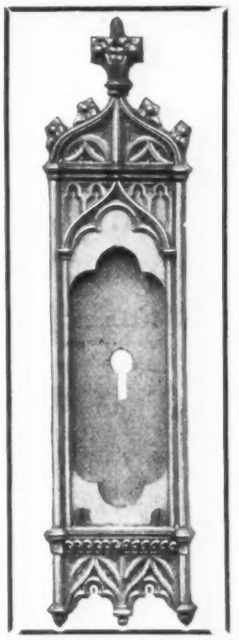
Factories, READING, PA.



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(Round Steel Wire.)

This is the only Broom which will clean or scrub a floor without the use of water For use in Machine Shops, Factories, Warehouses, Stores and all business places

The ideal Broom for hard wood floors.

It cleans without defacing.

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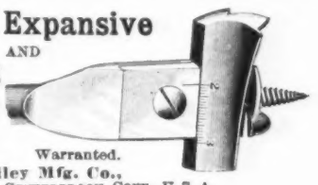

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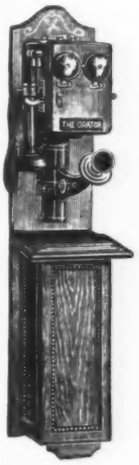

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solid back dust transmitters in Wall, Desk and Cabinet Styles.

They are **Convenient, Durable** and the **best** of **talkers.**

A trial will convince anyone of their superiority on either **short** or **long** distance work.

Anyone can make an instrument that will work well at first, but to produce one that will **continue** to meet every proper demand is quite another problem.

The Orator will.

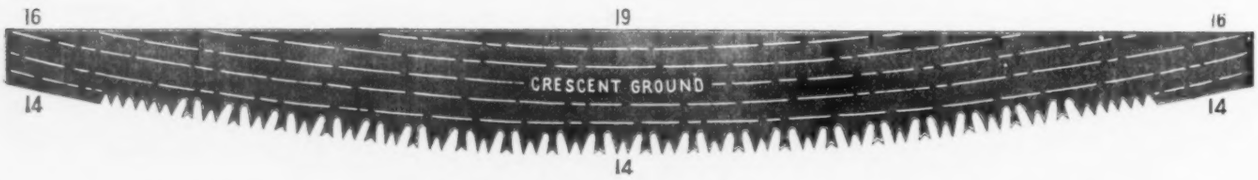
Manufactured by

THE RAWSON ELECTRIC CO.

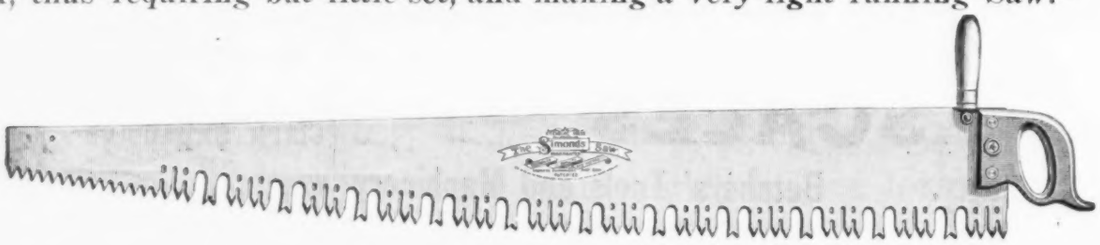
ELYRIA, O., U. S. A.

A Simple Story Simply Told.

The *Simonds Crescent Ground* and *One-Man Cross-cut Saws* received a *Special Medal* and *Diploma* at the World's Columbian Exposition, Chicago, 1893.



The Award reads as follows: *"For process of tempering to form, thus giving absolute uniformity of temper, a stiffness that never leaves them, and making possible the use of a high grade of steel. The crescent grinding gives the edge, or teeth, an even gauge or thickness throughout the entire length, increases the back ends of Saw two gauges, and makes the Saw thinner in middle of back, thus requiring but little set, and making a very light running Saw."*



The Simonds Crescent Ground Cross-cut Saw is sold subject to following warranty:

> We (The Simonds M'f'g Co., established 1832) guarantee that the Crescent Ground Saw will cut 10 per cent. more timber, same labor being used, than any other brand of Saws made in the United States.

Besides the above (our ***Special Award*** on Cross-cut Saws at the World's Fair, Chicago, 1893), we have three other Diplomas, and two other medals, making Three medals and Four Diplomas awarded us at that Exposition, covering our goods in general, and many important points of manufacture in particular, operated and controlled by us alone.

The Pick of Jobbers in the United States handle the SIMONDS Crescent-Ground Cross-Cut Saw.

Write Us for name of your nearest Jobber handling our Saw, or order direct of us.

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85 First St., PORTLAND, ORE. — 119 Jackson St., SEATTLE, WASH.

SIMONDS MFG. CO., Ltd., 215 Magazine St., NEW ORLEANS, LA.
SIMONDS SAW CO., SAN FRANCISCO, CAL.

Henry Disston & Sons,

INCORPORATED.

PHILADELPHIA, PENNA.

Manufacturers of

Saws, Files AND Tools

OF

SUPERIOR QUALITY

AND

UNSURPASSED WORKMANSHIP.

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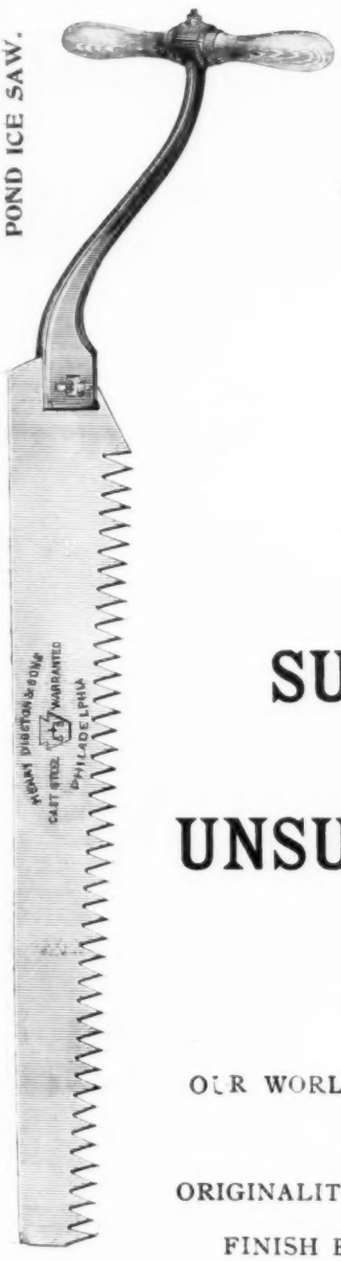


VIM CHAMPION.

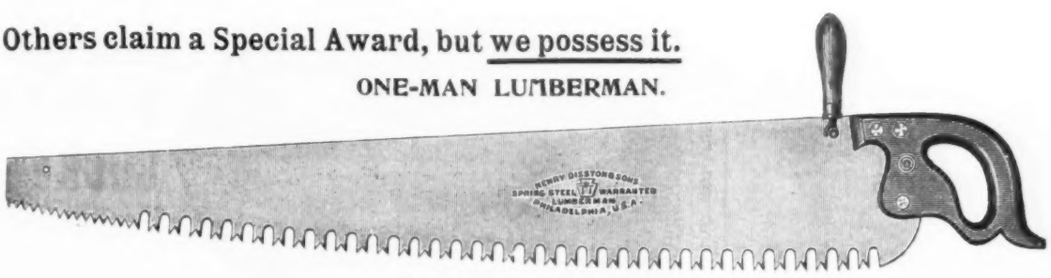
OUR WORLD'S COLUMBIAN EXPOSITION SPECIAL AWARD:

"DISSTON SAWS ARE *UNEXCELLED.*

ORIGINALITY OF DESIGN AND SUPERIORITY OF QUALITY AND FINISH ENTITLE THEM TO HIGHEST COMMENDATION."

Others claim a Special Award, but we possess it.

ONE-MAN LUMBERMAN.



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Note the figures==they tell the tale.

Segment Ground Saws.

14 Gauge on Tooth Edge. 16 Gauge on Ends on Back Edge. 19 Gauge at Center on Back Edge.

Ground on a **segment of a circle, the only true and practical method of grinding saws whereby a substantially uniform gauge can be given to the toothed edge and a true segment taper imparted to the blade, from tooth edge to back edge of the blade.** Will do 25 per cent. more work without filing than other saws.

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WOOD'S ICE TOOLS.

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Have you our Catalogue?

We buy entire stocks of merchandise at sheriffs', receivers', trustees', assignees', and manufacturers' sales. See our prices on Shovels, Hatchets, Axes, Rakes Wrenches, Locks, Butts, Vises, Nails, Wire, Iron Roofing, Tools, etc. Write at once for catalogue.

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NEW IDEAS.

THE AMERICAN HARDWARE STORE illustrates and describes the best methods that ingenuity and experience can devise for Store Arrangement, Accommodating Hardware, Effective Display of Stock and matters of vital importance to dealers.

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Send for Prices.

THE NATIONAL SAW CO.

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SALEM ELEVATOR BUCKETS.

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LEADERS.

You Can't Make Good knives any more than good bread without the right material, and even if you have the right material you can't make good knives if you don't know how to manipulate that material.

Solid Cocobolo Swell Handle with Bolster.

WARRANTED NOT TO GET LOOSE.

No. 146, 5, 5½, 6, 6½, 7 and 8 inch.

Five Rivet, Scaletang Beech Handle.

NOT SO MUCH TO LOOK AT, BUT A CUTTER.

No. 446, 5, 5½, 6, 6½, 7, 8, 9, 10, 11, 12, 13 and 14 inch.

The Steel That Goes into Goodell Butcher Knives is made for Goodell Butcher Knives and is found in no others. It is the same we have used for years. A quarter century experience has taught us how to manipulate that steel to produce the best results.

It costs more to make a good knife than a poor one, but not so much more as you might think (if you know how).

WE WARRANT OURS.

NEW YORK OFFICE, - No. 10 WARREN STREET.

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HARDWAREMEN—DO NOT ORDER another old-fashioned out of date two hand horse clipper. Be enterprising and order the '98 CHICAGO CLIPPER. The greatest clipping machine ever invented; holds the world's record for fast clipping; time 14 minutes. You can sell one of these machines to every man who used to buy the old fashioned two-hand variety. Ask your jobber about them or send to us direct.

HAIR CLIPPERS.

If you want a clipper "with a reputation" insist on the "Stewart Patent." There is no other "just as good" and they will cost you no more than the inferior kind.

We have just been awarded Gold Medal at Trans-Mississippi Exposition, highest and only award for horse clipping, sheep shearing and cattle grooming machines.

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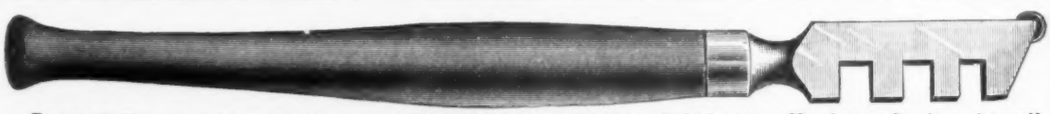
HAMMACHER, DELIUS & CO., Hamburg, Germany, Sole European Agents.

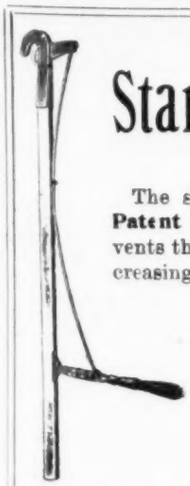
BUFFALO SCALE CO., Buffalo, N. Y.

SCALES OF ALL KINDS.



Barrett's Glass Cutters Standard

Barrett's Practical Glass Cutters are the standard the world over. Sold by more Hardware Dealers than all other makes combined. Send for prices and sample. W. L. BARRETT, Manufacturer, Bristol, Conn., U. S. A.



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THE NEW

Standard Tree Pruner.

Patented Nov 9, 1897.

The sectional cut shows this implement with our **Patent metallic brace plate,** which absolutely prevents the pole from splitting or breaking. Greatly increasing strength and durability.

MANUFACTURED BY

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SOLE AGENTS:

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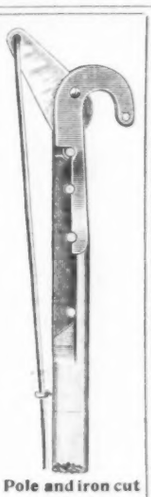
113 Chambers St., New York.

Send for circulars and discounts.



Pole and iron cut away showing brace plate.

STEEL FOOT SCRAPER.

Black Enameled.

Packed one dozen in a box; complete with round head blued screws.

PATENTED MARCH 19, 1889.

CAN'T BE BENT OR BROKEN.

Made from one piece best Bessemer Steel. Edge dressed smooth so that it will remove mud or ice without cutting the shoe. Neat, cheap and affording the dealer a good profit. No broken ones to replace as with cast iron scrapers. Every scraper gives lasting satisfaction. SOLD BY ALL JOBBERS. Made by

WM. E. PRATT MFG. CO., Chicago,

Manufacturers of all styles of Hog Rings, Netting Staples, Calf Weaners, Wire Mats, Husking Pins, Etc.

Take Your Choice

There are two lines of bicycles that hardware dealers can handle,

SELLERS AND STICKERS.

A bicycle manufacturer may and may not have a line that goes with a hardware dealer, a jobber picks from the whole lot the goods that he offers with the wants of the hardware dealer in view. From the many good agencies established and from the very many testimonials we have we must feel that we have been successful in our selections.

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HAND-MADE & GUARANTEED
NO MACHINE GRINDING ON DROP FORGED BLADES
HONED + READY FOR USE
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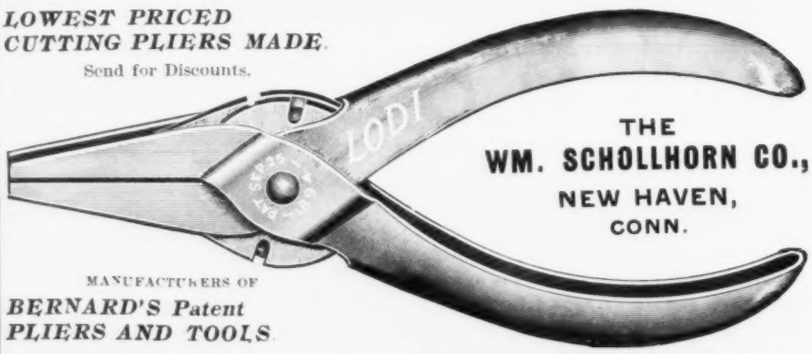

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When using "KEEN" Shakspeare Razor. Retails for $1.50, $2.00, and *Special Ground*, $2.50. SOLE AGENTS FOR
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BOSTON, November 17, 1898.

BUCK BROTHERS,
Millbury, Mass.

GENTLEMEN:

There are in use in the Mechanic Arts High School the following tools of your make which have been purchased during the last five years:

Two hundred seventeen sets of carving tools, sixteen in a set. }
Three hundred twenty-seven sets of carpenters' chisels, four in a set. } 5,770 Tools.
Ninety sets of wood-turning tools, eleven in a set. }

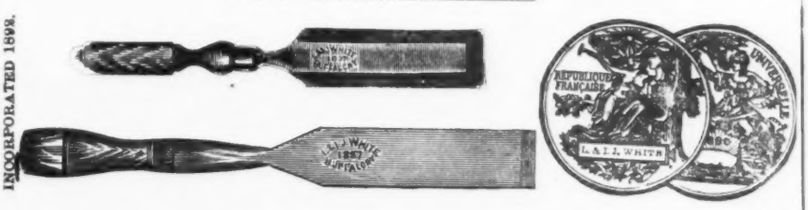
We have, also a considerable number of special chisels and gouges. These tools were purchased because we believe them to be the best available, and we have had no occasion to regret our choice. No more than six or eight defective tools have been discovered, and these have been promptly replaced by perfect ones without expense to the school.

Your house is to be commended both for the uniform excellence of its products, and its eminently satisfactory business methods.

Very truly yours,
CHARLES W. PARMENTER, PH. D., Head Master.

HIGHEST AWARD PARIS EXPOSITION, 1889.

ESTABLISHED 1837
INCORPORATED 1898.



THE L. & I. J. WHITE CO., MANUFACTURERS OF **EDGE TOOLS.**

BUFFALO, N. Y.

Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.

ESTABLISHED 1825. ESTABLISHED 1825

IMPORTANT DECISION RELATING TO THE

HEINISCH

TRADE-NAME ON SHEARS, TRIMMERS, &C.

The U. S. Circuit Court, Southern District of New York, Judge Townsend, has rendered a decision in the suit of "R. Heinisch's Sons Co. vs. Hermann Boker & Co."

"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

R. HEINISCH'S SONS CO.,
N. Y. OFFICE, 90 Chambers St. NEWARK, N. J.

NOT CONNECTED WITH ANY SHEAR COMBINATION.

Charles Buck, Millbury, Mass., U. S. A.

MILLBURY EDGE TOOL WORKS.

I MAKE A SPECIALTY OF CARVING TOOLS.

CHISELS,
GOUGES,
CUT and DOUBLE IRONS,
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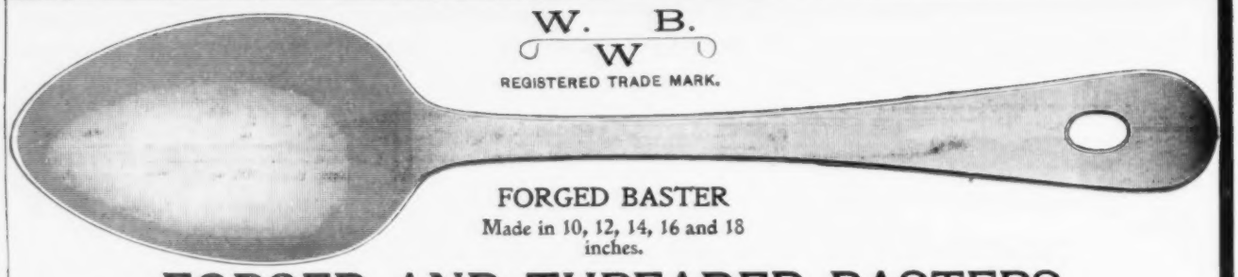

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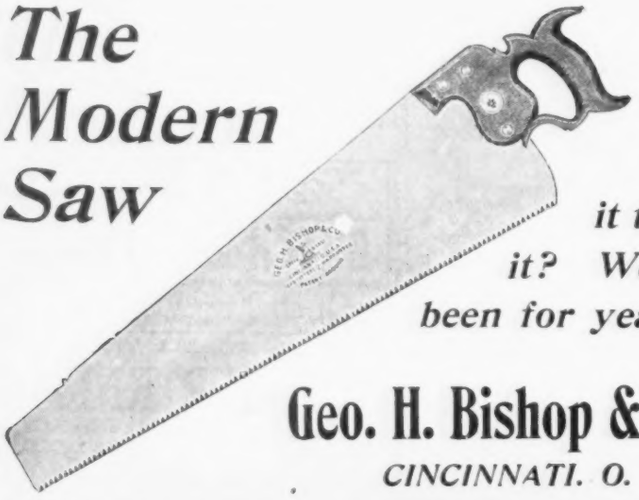

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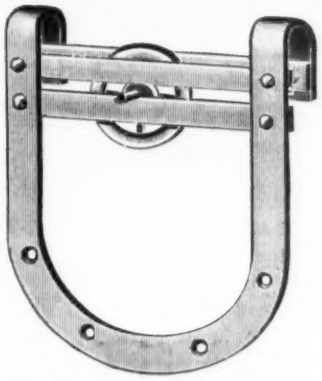

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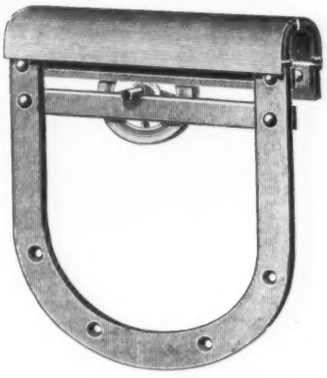

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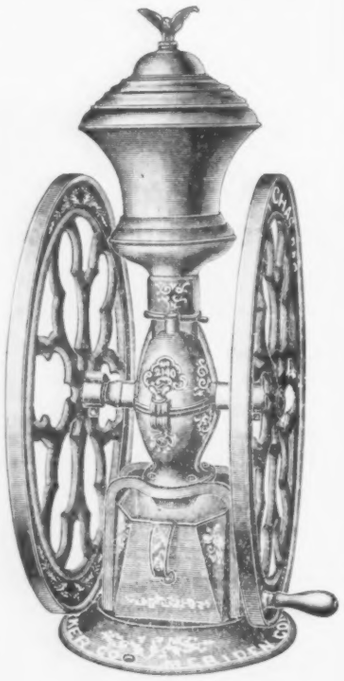

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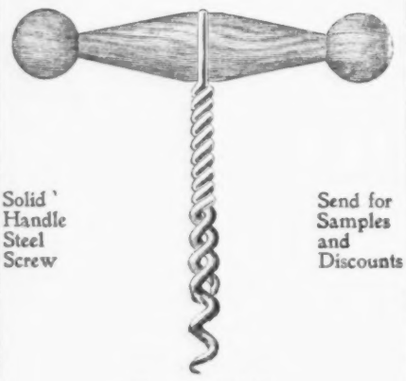

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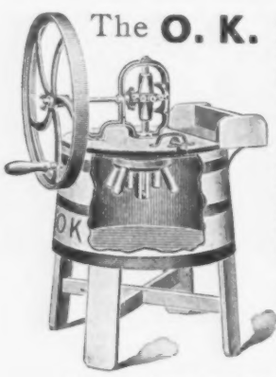

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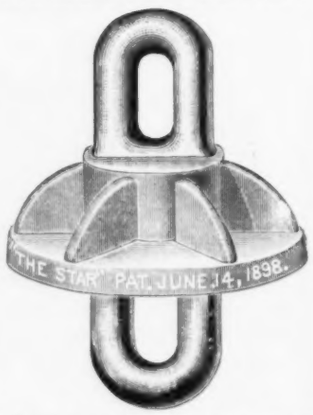

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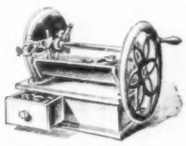

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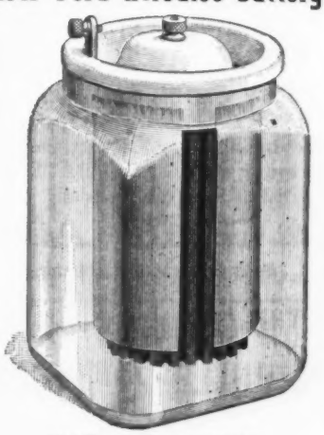

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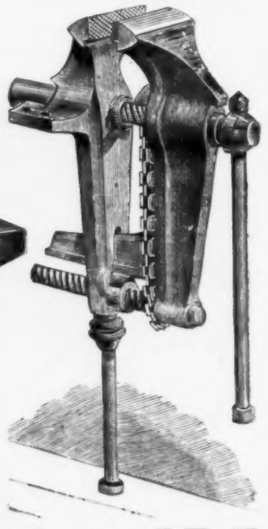

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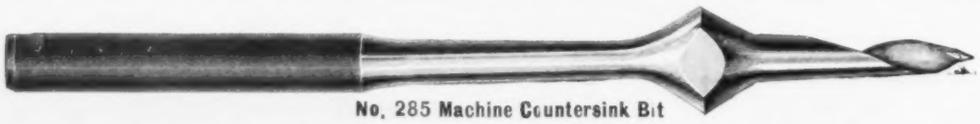

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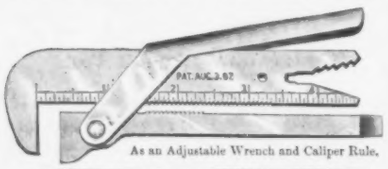

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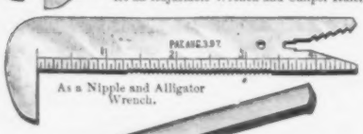

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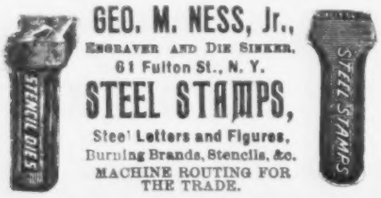

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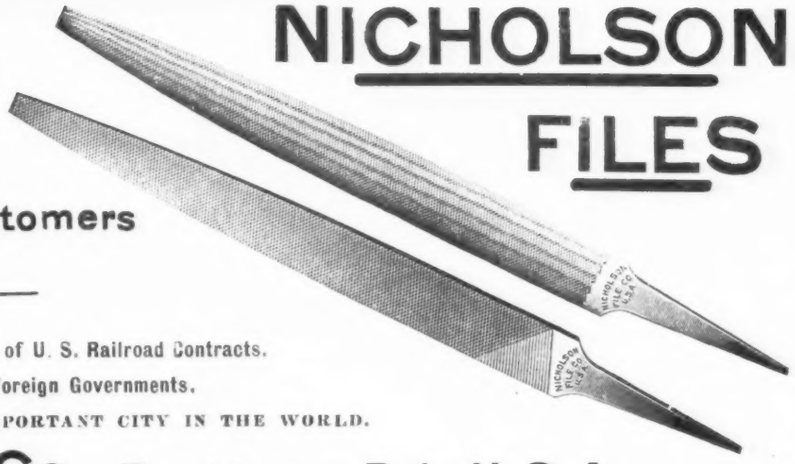

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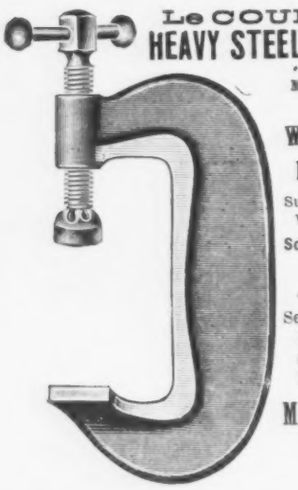

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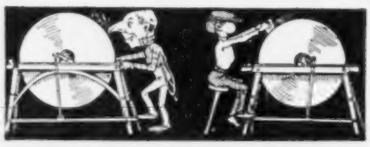

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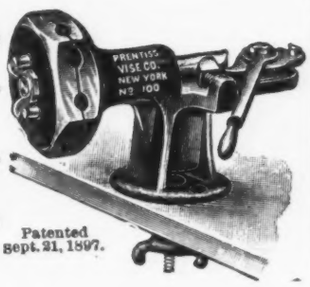

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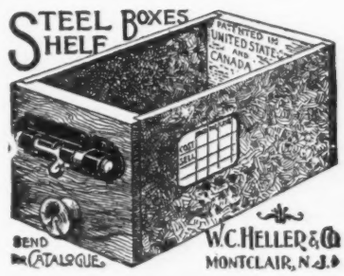

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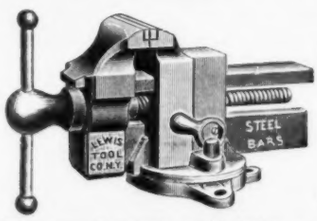

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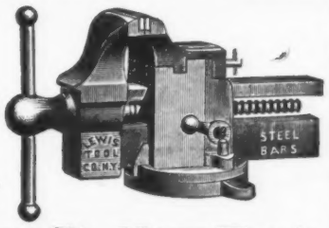

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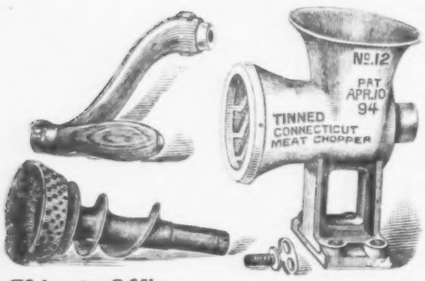

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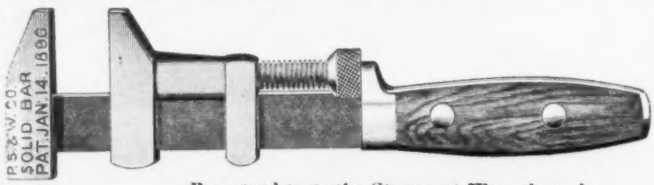

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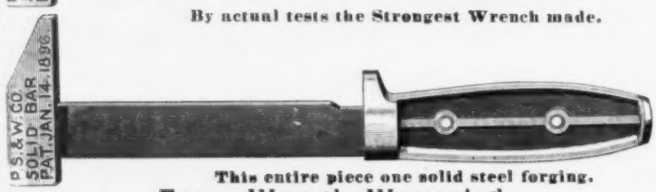

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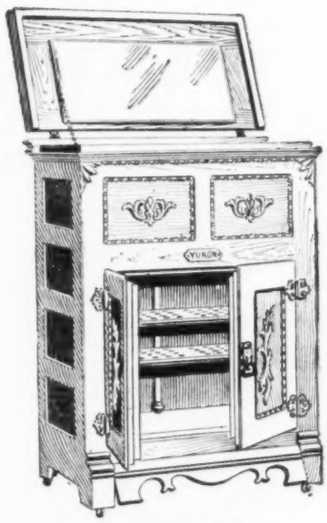

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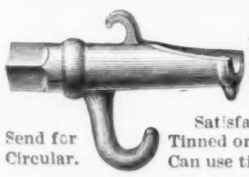

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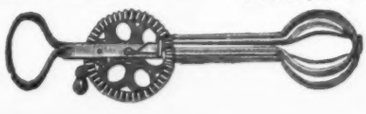

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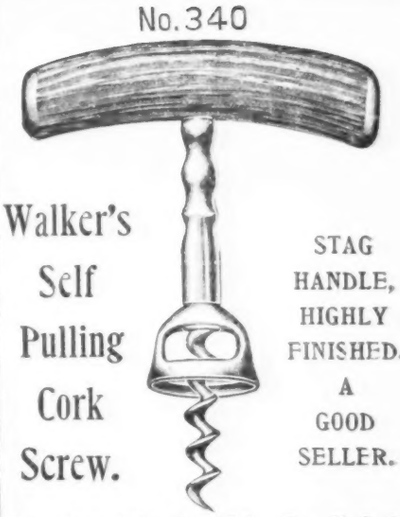

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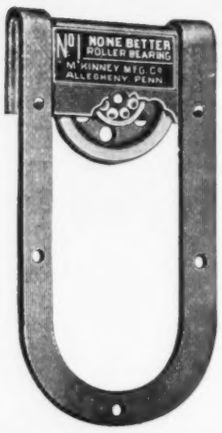

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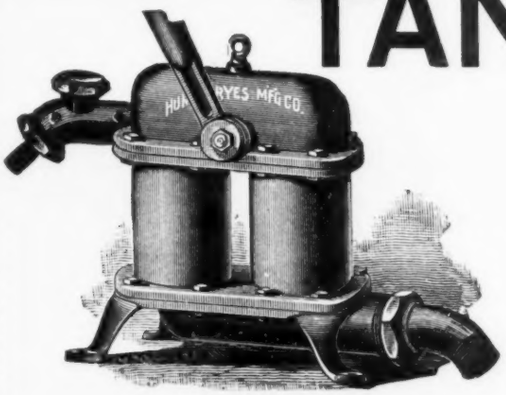

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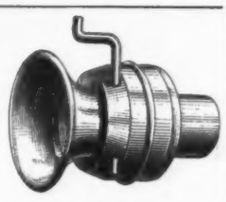

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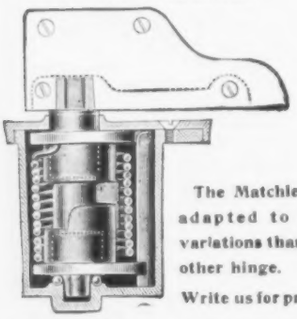

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House, Barn, Factory and Fire Doors,

regardless of size or weight.

Write for Catalogue. Our Prices are Low.

Wilcox Mfg. Co.,
AURORA, ILLS.

THE TOLER
Liquid Door Check and Spring.
PERFECTION ATTAINED AT LAST.

Entirely new in style and mechanism, **strong, simple and effective**, giving in results all the best achievements of other checks, together with new and valuable features only to be found in this.

It has a vertical case, with openings only at the top.

It has no plugs or caps screwed to the cylinder ends. It cannot leak. There is no way for the liquid to escape after the Check is applied.

The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material throughout.

It works to perfection, closing the door quickly and gently.

It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

Regular finish, Gold Bronze No extra price for Silver Bronze or Dead Black when so ordered. Furnished Plated in Brass, Nickel, Copper or Silver, Plain or Oxidized, at a reasonable extra charge. No extra charge for Brackets where needed.

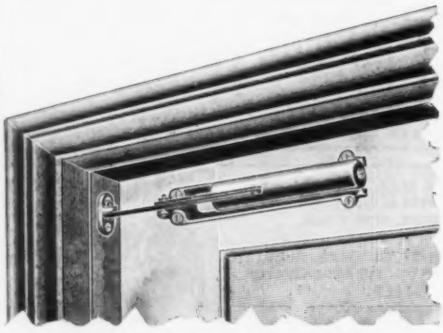
Manufactured by
JOHN TOLER, SONS & CO.,
NEWARK, N. J., U. S. A.
W. H. QUINN & CO., General Agents, No. 103 Chambers St., NEW YORK.

WHEELING HINGE CO.,
Headquarters For

Wrought Hinges, Carriage Bolts, Wrought Goods, Stamped Fire Shovels, Milk Jar Tops, Beer Bottle Trimmings. We solicit orders for

SPECIALTIES
Made of Steel, Zinc, Tin or Brass, Stamped or Forged.

WHEELING, W. VA.



THE WARNER . . . SCREEN DOOR CHECK.

An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

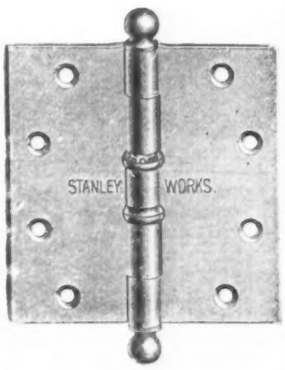
It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

GET OUR NEW CATALOGUE AND PRICES.

ARCADE MANF'G CO., Freeport, Ill., U. S. A.

It is for your interest to carry a stock of

Stanley's Ball Bearing Steel Butts.



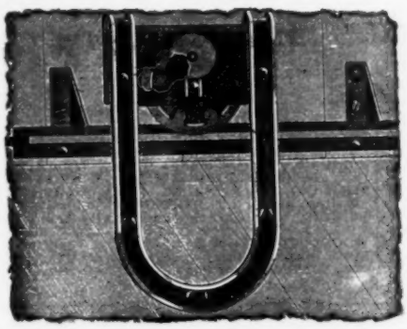
They are being extensively advertised, and you will have calls for them. Many architects are specifying them for *all* their best work. The reason is obvious. There is nothing else made in the way of hinges possessing so many merits. You know what these merits are? If not, send for illustrated booklet.

THE STANLEY WORKS, Dept. F, NEW BRITAIN, CONN.
79 CHAMBERS ST., N. Y.

Celebrated STAR BRAND

JACK CHAINS,
SAFETY, PLUMBERS' and
LADDER CHAINS,
ESCUTCHEON PINS.

Now made by
The Turner & Seymour Mfg. Co.,
TORRINGTON, CONN.
Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware
and Fancy Metal Goods.



The New Union Steel Hanger WITH THE Lawrence Sinuated Wheel.

THE LAWRENCE STEEL WHEEL
consists of two sinuated steel discs, extending to within five-sixteenths of the circumference and the point of sinuation projecting from each disc to the opposite, forming an inside tread to fit all Bracket Rails.

THE UNION HAS AN ENDLESS RUN WITHOUT FRICTION.

THE UNION STEEL CHANNEL BAR with our New Raised Bearing gives an even surface for the Bolt to rest on. **The only Rail which will not sag vertically nor warp horizontally.**

THE STRONGEST AND BEST HANGER FRAME KNOWN.
Apply for Circulars and Prices.

LAWRENCE BROTHERS, - STERLING, ILLINOIS.
Manufacturers of Steel Strap Hinges, Door Hangers, Pulleys, and other Hardware Specialties.

ESPECIALLY ADAPTED FOR EXPORT TRADE.

Eureka

Rapidly supplanting old style German chains in foreign markets.

WELDLESS CHAIN SPECIALTIES. CHEAPEST—STRONGEST—BEST.

Manufactured only by
CARLAND CHAIN CO.,
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——WRITE FOR FREE SAMPLES——

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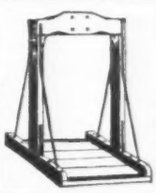
THIS IS THE LINK.

Made on the principle of a square knot and *cannot* be pulled out.

Other wire links are now in the market, so if you want the *ONEIDA WIRE LINK CHAIN,* remember this shape.

ONEIDA COMMUNITY, Ltd., NIAGARA FALLS, N.Y., U. S. A.



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made to be sold by the Hardware trade. Can be placed in position by any carpenter. Catalogue free.

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408 Cherry St., Phila., Pa.

Dumb Waiters.....

that don't keep you waiting.
Simple; smooth-running; noiseless. All sizes, capacities and styles. Hardware dealers can sell them.

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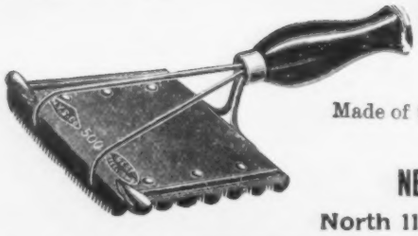

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Made of the finest cold rolled steel and standard everywhere. A full line of 75 numbers.

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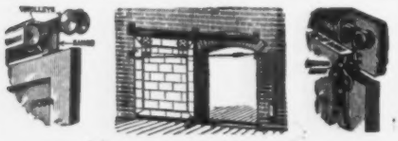

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We have sold 3,000,000 feet of Track and 300,000 sets of Hangers the last six years is because

True Merit has been its own reward.

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Coburn Trolley Track Mfg. Co.,

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THE

Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for **15 years.**

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THE BICYCLE STEP LADDER.
Especially adapted for Hardware Stores.

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**

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It Costs Nothing

for a Catalogue, and you will find if you allow us to figure with you for the placing of one or more of our ladders in your store, that it will ***cost you less*** to transact your business than at present.

All live, wide-awake, up-to-date dealers are buying them. Why not you?

They are durable, well made, cheap and are becoming an absolute necessity in all stores. They are made to order, and will fit all kinds of shelving.

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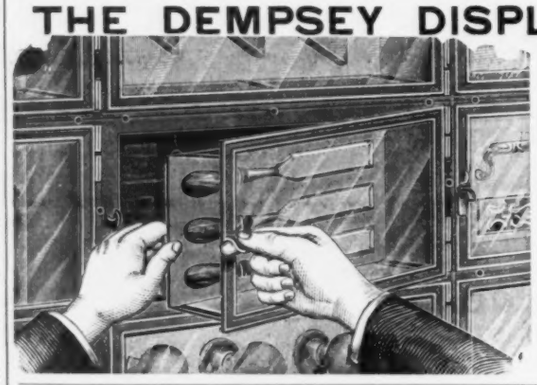
1922 and 1924 N. Broadway, St. Louis, Mo.

THE DEMPSEY DISPLAY DOORS.



Save stock and sample from dust, dirt and moisture.

No rust, no soiled stock.

Stock is never handled until sale is made.

Removable sample boards.

The finest fixture made and costs no more than the old style.

See full description in *The Iron Age* of September 22d.

Agents wanted in every city in the world.

Dempsey Mfg. Co.

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INTERCHANGEABLE
LOCK-CORNER SHELF BOXES.
Screw Cases, &c.
FOR THE HARDWARE TRADE
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HARDWARE SHELF BOXES.

Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request.
We also make a general line of Paper Boxes.

THE JESSE JONES PAPER BOX CO.,
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LIVE HARDWARE MEN USE
PERFECT SHELF BOXES
WE MAKE
PERFECT SHELF BOXES
WRITE FOR
CATALOGUE AND PRICES.
C. P. MOORE,
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Lane's Steel Carriage Jack.

Protected by Five U. S. Patents.

No. 1 Jack, to lift 900 pounds.
" 2 " " 1800

MANUFACTURED BY

Lane Brothers Company,
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THE
READING STANDARD
BLOCK (Patented).

This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
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8 YEARS
Caldwell Sash Balance.

It stands the test of time.

Caldwell Mfg. Co.,
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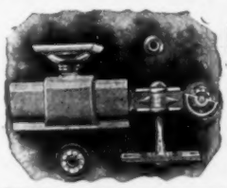

McCABE
Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
SEND FOR CATALOGUE.
McCabe Hanger Mfg. Co.,
533-543 West 22d St., New York.

PORTER SCREEN MANUFACTURING CO.,
Manufacturers of
Door and Window Screens,
CATALOGUE FREE. Burlington, Vt.

BICYCLE GRIPS
in Wood and Cork. Don't buy without getting our prices. . . .

VARIETY WOOD TURNINGS
in Foreign and Domestic Wood.
L. M. JONES CO., - Winsted, Conn.

FREE SAMPLE, THE ONLY **BAR-KEEPER'S FRIEND** METAL POLISH.
WRITE
GEO. W. HOFFMAN,
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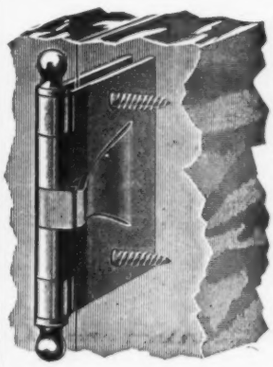
The Hoffman Hinge.



No more parts than the ordinary springless hinge. Is stamped from spring steel, causing the door to automatically swing either way after passing the center, permitting it to remain wide open or holding it firmly closed. Cheaper per door. Does away with spring catches. Needs only a common screw pull knob.

For doors of Cupboards, Side Boards, Ice Boxes, Desks, China Closets, Drop Doors of Linen closets, and for Cellar Windows, &c.

HOFFMAN HINGE CO.,
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SILVER LAKE SASH CORD
Has been the standard for thirty years.

MANUFACTURED BY THE SILVER LAKE CO. BOSTON.

Every Hank Bears the Above Label.
SEND FOR SAMPLE.

"A NOISELESS DOOR CLOSER."
The
"NORTON"

DOOR-CHECK ...and... SPRING CO., Sears Building, Boston, Mass.
SEND FOR CIRCULAR.

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HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys.

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SASH WEIGHTS.
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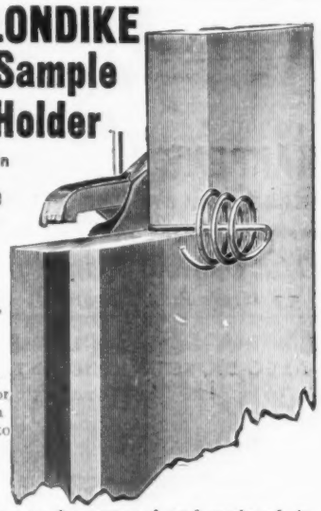
KLONDIKE Sample Holder

For use in Hardware Stores.



Economy, Simplicity, Utility.

No more tarnished or shopworn samples to sell at reduced price.

Samples can be removed and replaced instantly, hence sample may be sold and new one put in its place, thus saving each year many times the cost of holder.

Holds Anything. No Screws.
So cheap you cannot afford to be without it.
WRITE FOR FREE SAMPLE.

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"PIONEER" FIFTY POINT CARBON STEEL TUBING

The uniformity obtained from our process of manufacture is especially desirable for bicycle purposes.

We invite our customers to come in on our floor and select their tube—test specimens from the general run, and to take any piece they choose to select as a sample of excellence.

NO SPECIALLY PREPARED SAMPLES.

THE
POPE TUBE CO.,
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"Pioneers" in Correct Composition.

We should be pleased to quote you discounts on application. Send for printed matter.

SHARPENS SKATES, ALSO **SALES**

EASY SELLER. BIG PROFITS.

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Manufacturers of BELLS of all Descriptions.
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Established in 1832.

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MANUFACTURERS & EXPORTERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER
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BRIGHT COLD ROLLED "SWEDOH" STEEL.
UNEXCELLED FOR PRESSED, STAMPED,
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WILMOT'S PATENT "CLINCHER" CYCLE TUBING

STRONGER THAN THE SEAMLESS.

WE MAKE A SPECIALTY OF
WILMOT'S PATENT SPRING STEEL BEDSTEAD TUBING
OF SUPERIOR FINISH, LIGHTNESS & STRENGTH.

ENGINEERS', & STEAMBOAT SETS, "COPPERIZED" ALSO NICKEL, BRASS-PLATED & JAPANNED.

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COLD ROLLED STRIP STEEL.

Patent "Clincher" Fifty Carbon "Swedoh" Spring Steel Cycle Tubing.

The Crowning Feature of a Most Successful Season for

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Was the reception of the Gold Medal at the Trans-Mississippi Exposition.

Write for complete illustrated catalogue of the guns, which have nearly a century's experience behind them.

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PERFECTION
Automatic Revolver
NEW

Automatic shell extracting, double action, small frame. Weighs 12 oz. Rebounding lock. 32 caliber. 5 shot.
Made with shorter barrel for bicycle use.
The most perfect small pistol made.

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MILLETT'S PATENT **CORE OVEN**

No one who makes small cores can afford to be without it. . .

DOUBLE DOORS,

One closing the oven when the other is open.

Saves Fuel, Saves Time.

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The ovens can be seen in the sample rooms of the S. Obermayer Co., either in Cincinnati or Chicago, and in the show rooms of J. W. Paxson & Co., Philadelphia.

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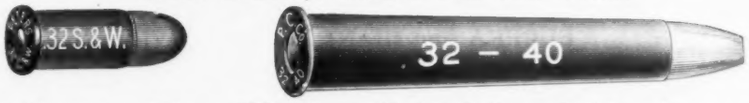
Begin the new year by getting correct prices on

PETERS CARTRIDGES,

LOADED SHELLS, PRIMERS AND GUN WADS.



The rifle experts of the world have carefully tested, then adopted, and won with them. Ask for Price List, Circulars and the '99 Calendar.

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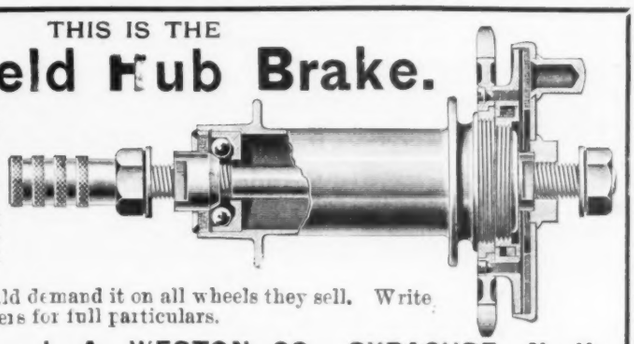
THIS IS THE

Canfield Hub Brake.

It keeps your wheel under absolute control either on hills or level roadways.
Other patents pending. Patents cover broadly brakes operated with screw and releasing spring. A large number of manufacturers have adopted this brake as a part of their regular equipment.



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Pistol or *Shotgun*, you'll make a Bull's Eye by sending three 2c. stamps for the *Ideal Hand-book* "D," 128 pages, FREE. The latest Encyclopedia of *Arms, Powders, Shot and Bullets.* Mention *Iron Age.*
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Made by
The Crawford Mfg. Co.
Send for Catalogue Hagerstown, Md.

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Woodman's Speed Indicators,
For ascertaining correct speed of Dynamos, Steam Engines, Shafting, Floor Machines, etc. Supplied with Rubber Tips, Split Caps and Plain Caps, etc.
Prices as Low as the Lowest and Workmanship as Good as the Best, and Better.
Send for our Prices and Discounts.
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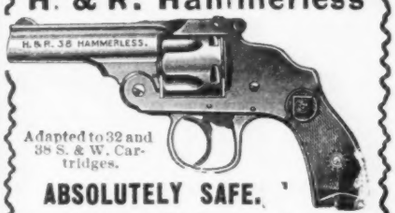
ENLARGED AND IMPROVED FACILITIES.
DROP FORGINGS
IN ALL ITS BRANCHES.
Iron, Steel, Copper and Aluminum.
Specifications for estimates on your 1899 requirements solicited.
Prompt, Efficient and Satisfactory Work.

H. & R. Hammerless



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ABSOLUTELY SAFE.
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Descriptive catalogue free on request.

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CHAIN MODELS, . . $50.00
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Flush Joints. Mannesmann Tubing. Large Sprockets.
The Agency for 1899 will be a valuable adjunct for the energetic dealer in hardware or kindred trades.

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Satisfied Customers are our

BEST FRIENDS AND ADVERTISERS..

When you sell Nationals you get the benefit of this good feeling. Your margin of profit is all yours—What you get for your money is as important as the amount you pay—When you buy and sell the cheapest, the repairman has your profits at the end of the season.

Sell National bicycles and build up your business with satisfied customers.

Wholesale prices to the trade only.

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THE ▲ KING ▲ REPEATING ▲ AIR ▲ RIFLE

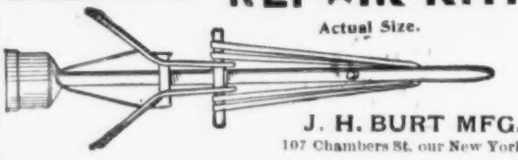
A full stock carried in San Francisco.

The only perfect repeating Air Rifle in the world. Shoots 150 times without reloading

Metal parts made entirely of steel, highly polished. Black walnut stock. For sale by jobbers everywhere. Manufactured by

THE MARKHAM AIR RIFLE CO. Plymouth, Mich.

CALL'S REPAIR KIT. This does the work—Tool, rubber band and two fingers.



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$24.00 per Gross.

Send for Circular, etc.
Keep it in the vest pocket.

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Snow Holders

ARE ADJUSTABLE.
When Set Are Firm.

Best made for bicycle stores, public buildings, offices, stores, churches, schools, factories, in fact anywhere. Wall and floor holders. Various styles furnished in any finish. Write for prices.

SNOW WIRE WORKS,
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Machine Knives, Shear Blades Presses and Dies.

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Slate Hooks.

One Hook to Each Slate.
Manufactured by
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GEO. JOHNSON, Manufacturer of

ESTABLISHED 1871

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UNMOUNTED.

STEEL GONG BELLS
—AND—
BRIGHT COLD ROLLED STRIP STEEL FOR ALL PURPOSES.

ICE TONGS, HAY AND BOX HOOKS,
AND THE CELEBRATED
EUREKA and GIANT BICYCLE WRENCHES.
MANUFACTURED BY
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BICYCLE SUNDRIES
AT LOWEST PRICES.

Send for Complete Catalogue.

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Standard Bicycle Wrenches.
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Interesting Prices to Jobbers and Exporters.

SCHOVERLING, DALY & GALES, 325 Broadway, New York.

GLIDDEN'S METALLIC REPAIR OUTFIT

The one that has the Hinged Plugs.

THIS is the smallest, neatest, most compact and practical repair outfit ever offered to the public. Complete in a tin box 1½ inches long, 1 inch wide and ¼ inch thick. It will repair a puncture at once, without the use of cement, and any woman or child can use it. The plug is made of metal with a **hinged head, which can be forced into a much smaller opening than one with a stationary head.** Two sizes of plugs are furnished with each kit, which will fit ordinary punctures; also a cutter is furnished, to be used when the puncture is too small to admit the plug.

Directions for use. Place the flat plate of the plug so it will be loose on the key. Screw the key into the plug and insert into the hole, leaving the flat plate on the outside of tire. Draw back the key so that the plug will rest flat on the inside of the tire. Screw the flat plate to plug with wrench (left hand thread), and turn key to right. Remove the key by turning to left, and you have a permanent repair which does not injure the tire or its looks.

DISCOUNT TO THE TRADE, ASK YOUR JOBBER FOR IT.

——Sole Selling Agents,——

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THE—1899

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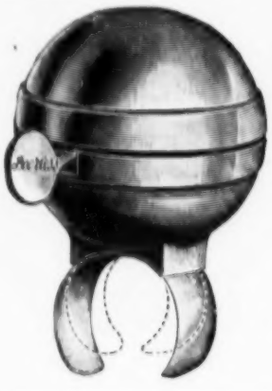

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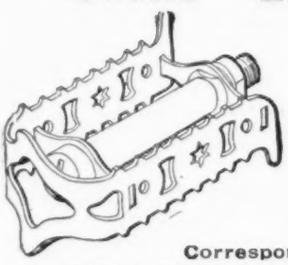

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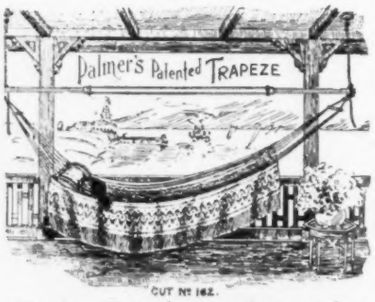

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The above figure shows an Arawana slung from a Trapeze adjusted to its maximum extension as regards its suspension from the ceiling.

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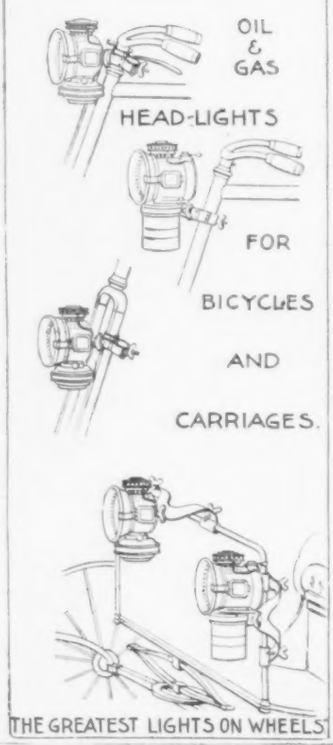

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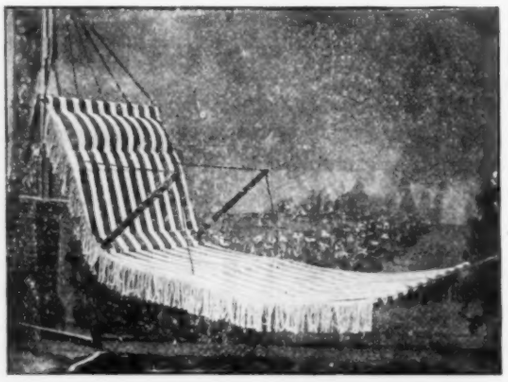

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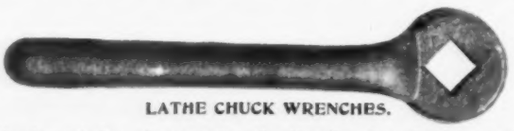
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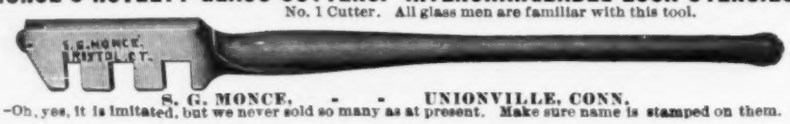

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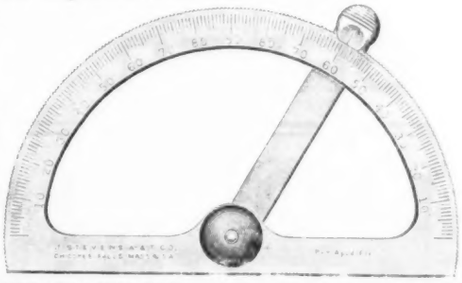

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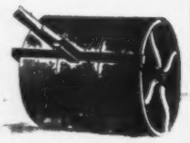

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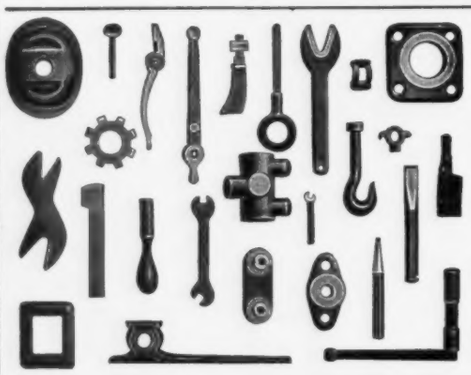

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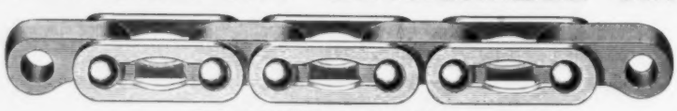

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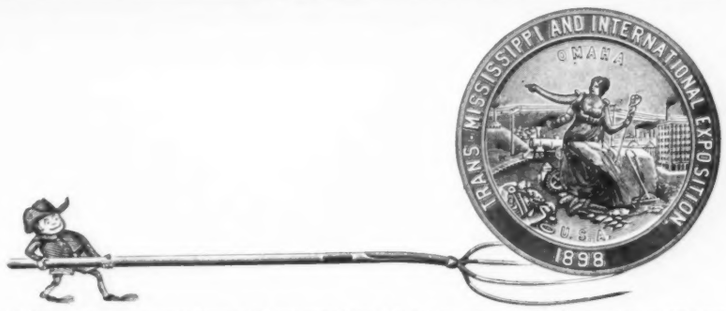

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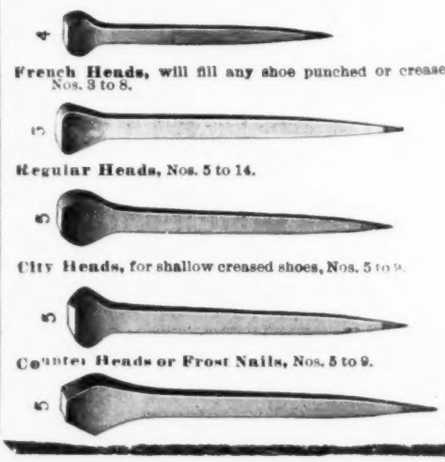

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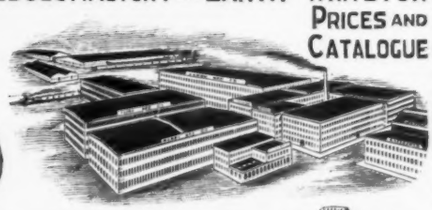

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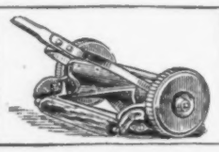

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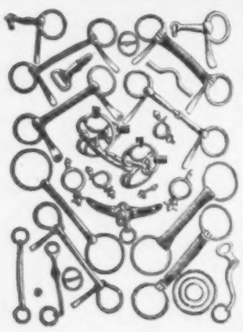

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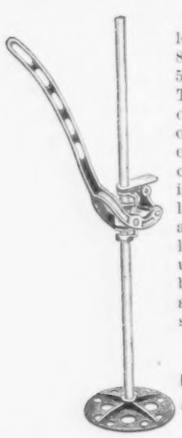

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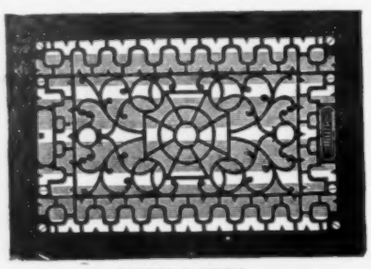

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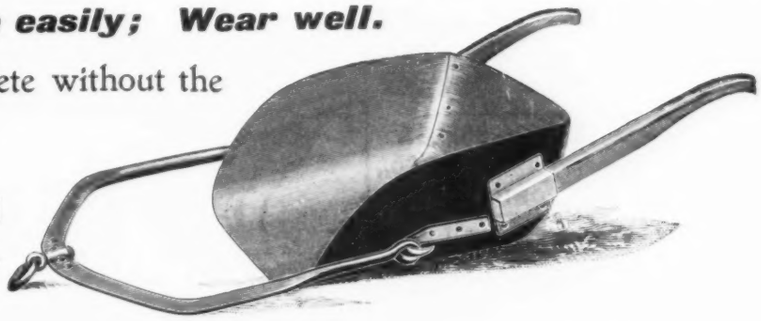

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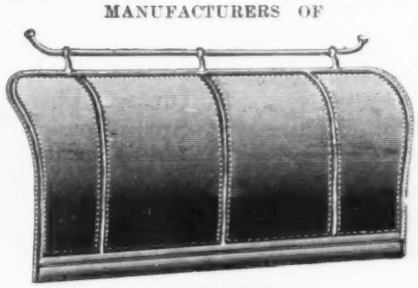

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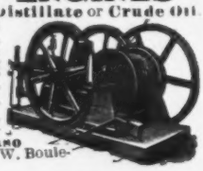

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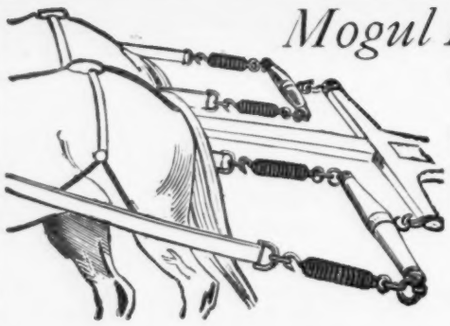

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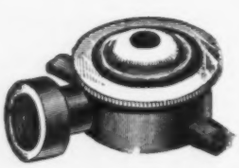

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Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

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Dempsey Mfg. Co., Cleveland, O.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Norton Door Check & Spring Co., Boston.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Stover Novelty Works, Freeport, Ill.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Drilling Machines, Automatic.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia, R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co , Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I
Stiles & Parker Press Co., Brooklyn, N.Y.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Standard Co , Boston, Mass
Taplin Mfg. Co., Forestville, Conn.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westingh use Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Schofield & Co., Freeport, Ill.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass
New Castle Engineering Works, Pittsburgh, Pa.
Phillips, F. R. Sons, Phila., Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Palmer, Bros., Mianus, Conn.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co , Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Bay State Iron Works, Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tol, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Exhibition, Export.
International Land & Exhibition Co., New York.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exterminators, Insect.
Smith, D. E. & Co., Utica, N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros , Newark, N. J.

Faucets.
McKenna, A. & T., Pittsburgh, Pa.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co , Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, In
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago, Ill.
Ludlow Saylor Wire Co., St. Louis, Mo
Stewart Iron Works, Cincinnati, Ohio.
Union Fence Co., De Kalb, Ill.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Fine Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Foot Scrapers.
Pratt, Wm. E. Mfg. Co , Chicago, Ill,

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Forge Co., Lansingburgh, N. Y.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fruit Jar Trimmings.
Consolidated Fruit Jar Co., 49 Warren st., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Fuses.
Ensign, Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co , Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co , 345 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M., Holland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.

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Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Standard Machine Co., Holyoke, Mass.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Hack Saw Blades.
Goodell Bros. Co., Greenfield, Mass.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Graham, John H. & Co., 113 Chambers St., N. Y.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co., Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Cuas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Snow, L. T., New Haven, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Box, Alfred & Co., Phila.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Pa.
Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray S., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schmiedberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Gerlach, Peter & Co., Cleveland, O.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lilienfeld, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.

Job Lots, Hardware.
Chicago House Wrecking Co., Chicago, Ill.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.

Locks and Knobs.
Reading Hdw. Co., Reading, Pa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass.
Farrel Foundry & Mch. Co., Ansonia, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Pouliterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Knives.
Loyd, John, 558-562 Water St., N. Y.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Hartford Mch. Screw Co., Hartford, Ct.
Miles, F. S., Phila., Pa.
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago Milwaukee & St. Paul R. R. Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Attachment for Lathes.
Adjsch Mfg. Co., Phila., Pa.

Milling Machines.
Adams Co., Dubuque, Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gallem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Nail Machinery.
Atherton, Jesse Auburn & L.
Bates Machine Co., Joliet, Ill.
Crescent Mfg. Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Maltby-Stanley Co., 20 Warren St., N. Y.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Johns H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

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Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Walter & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Haik & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Forceps.
Reimers, J. N. & Co., Davenport, Iowa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N. Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore,
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland,
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws.
Stover Novelty Works, Freeport, Ill.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Bruelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wats & Roos Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Mach. Co., Bridgeton, N. J.
Manville, E. J. Mch. Co., Waterbury, Ct.
Mossberg & Granville Mfg. Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn
Smith, Seymour & Son, Oakville, Conn.

Pruning Shears.
Smith, Seymour & Son, Oakville, Conn.

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Meyers, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
Mersick, C. S. & Co., New Haven Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N. Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham, 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry. & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry. & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff Novelty Co., Gibsonburg, O.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Foster, H. H., Ca. of Vt.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Saw Vises.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scales.
American Cutlery Co., Chicago, Ill.
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.

Hartford Mach. Screw Co., Hartford, Ct.
Jones & Lamson Mch. Co., Springfield, Vt.

Screw Plates.
Fairbanks Co., 311 B'way, N. Y.

Screws, *Makers of.*
Franklin Moore Co., Winsted, Conn.
Hartford Mch. Screw Co., Hartford, Ct.
Haskell, Wm. H. Mfg. Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Stroud, E. H. & Co., Chicago, Ill.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co. St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 700 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Markle Lead Works, St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City, N. J.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, J. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

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Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

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Lord Bros. Mfg Co., Tilton N. H.
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Roland, Wm. & Harvey, Phila., Pa.
Selden Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Hoffman Hinge Co., Cleveland, Ohio.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N.Y.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich.
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
D'Este & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
D'Este & Seeley Co., Boston, Mass.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.
Sennett, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
D'Este & Seeley Co., Boston, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
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Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

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Export Iron & Steel Co., Pittsburgh, Pa.

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Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
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Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
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Frankford Steel Co., Philadelphia.
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Whitney, A. R. & Co., 29 Broadway, N.Y
Wilmot & Hobbs Mfg. Co., Bridgeport.

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Denman & Davis, 85-87 John St., N. Y.

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Bethlehem Iron Co., S. Bethlehem, Pa.
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Curtis & Curtis, Bridgeport, Conn.
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Sweetser, W. A., Brockton, Mass.

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Ideal Machine Works, Hartford, Conn.

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Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

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Phœnix Tube Co., Brooklyn, N. Y.

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Morse Twist Drill & Machine Co., New Bedford, Mass.
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Lunkenheimer Co., Cincinnati, O.
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Mason Regulator Co., Boston, Mass.
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Howard & Morse, 45 Fulton St., N. Y.

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Prentiss Vise Co., 44 Barclay, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

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Anderson Pole & Shaft Co., Anderson, Ind.
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Mossberg Wrench Co., Attleboro, Mass.

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Flint & Walling Co., Kendallville, Ind.

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Samson Cordage Works, Boston, Mass,

Window Fasteners.
Stanley Works, New Britain, Conn.

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Taplin Mfg. Co., Forestville, Ct.

Wire.
Dillon-Griswold Wire Co., Sterling, Ill.
Indiana Wire Fence Co., Crawfordsville, Ind.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

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Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey Wire Works Co., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

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King, J. M. & Co., Watertown, N. Y.
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Utica Drop Forge & Tool Co., Utica, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.

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Morgan Construction Co., Worcester.
Mossberg & Granville Mfg. Co., Providence, R. I.

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Darby, Edward & Sons, Phila.
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Hendee Wire Brush Co., Milwaukee, Wis.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

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Adt, John & Son, New Haven, Conn.
American Wire Goods Co., Lowell, Mass.
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Nilson, A. H. Mch. Co., Bridgeport, Conn.
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Pittsburgh Wire Co., Pittsburgh, Pa.
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Townsend, C. C. & E. P., New Brighton,
Whitney, A. R. & Co., 29 Broadway, N.Y.

Wire Nail Machinery.
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Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

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Jenkinson, R. C. & Co., Newark, N. J.

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Washburn & Moen Mfg. Co., Worcester,
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

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Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

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Cook, Asa S. & Co., Hartford, Ct.

Wood Working Machinery
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches.
Bemis & Call Hdw. & Tool Co., Springfield, Mass.
Bonney Vise & Tool Co., Phila., Pa.
Coes Wrench Co., Worcester, Mass.
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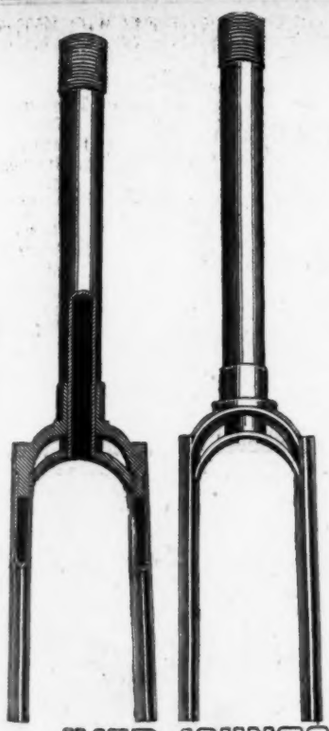

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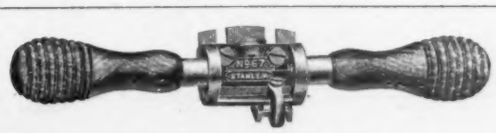

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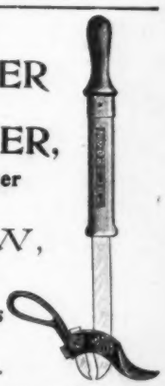

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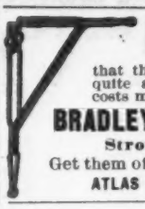

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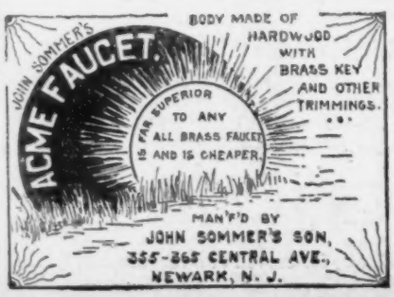

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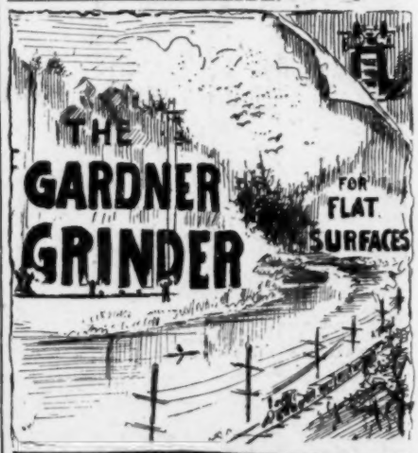

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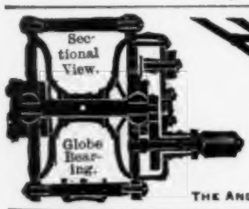

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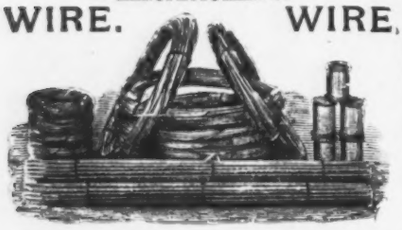

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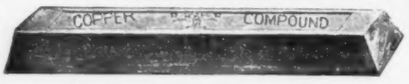

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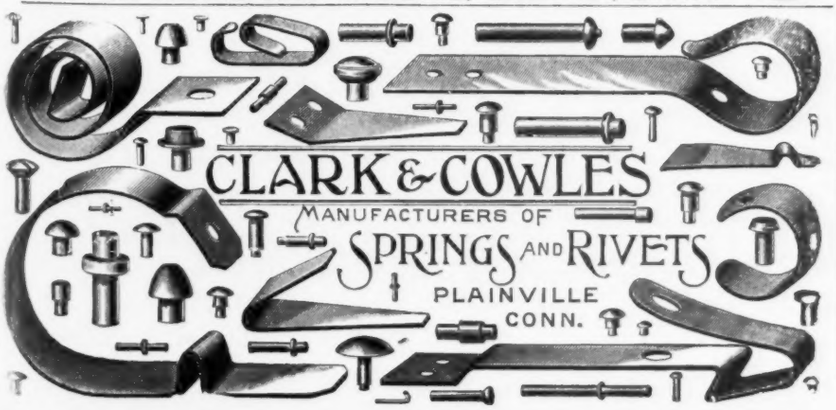
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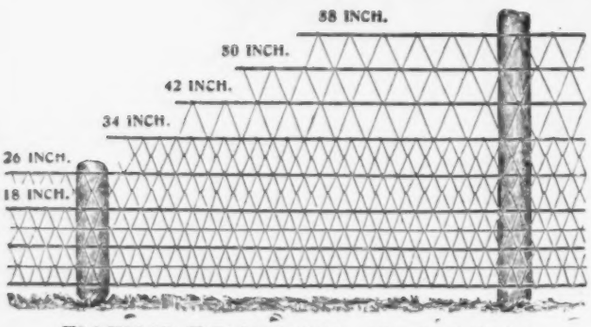

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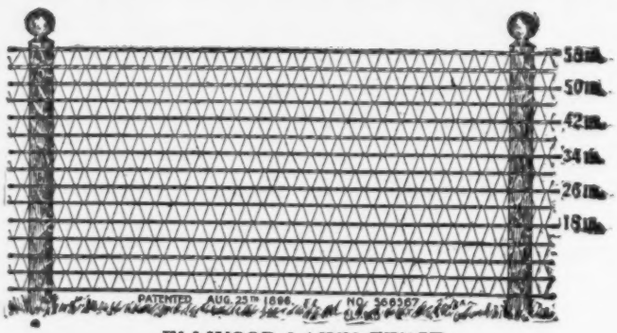

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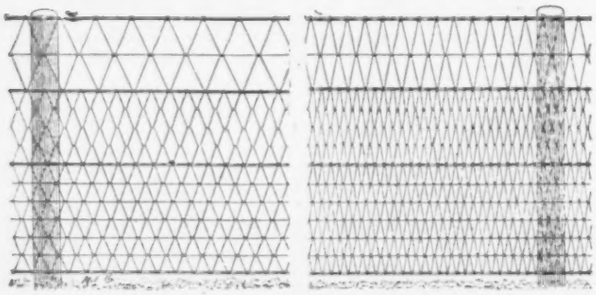

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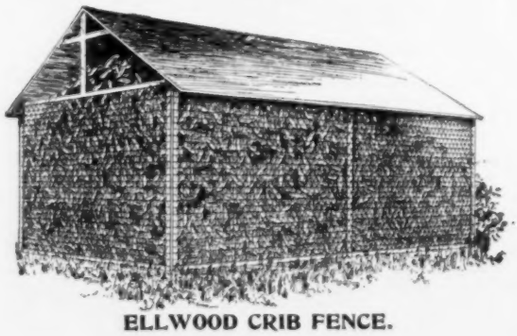

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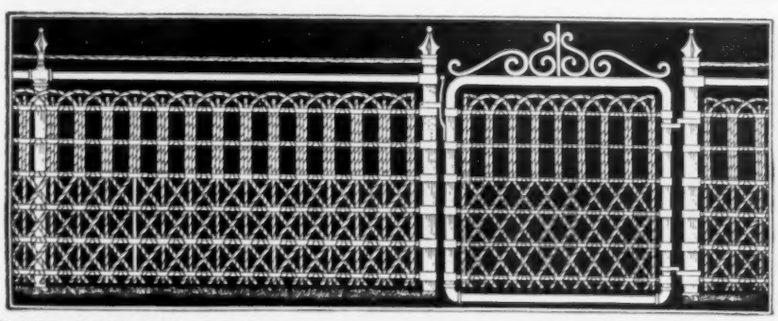

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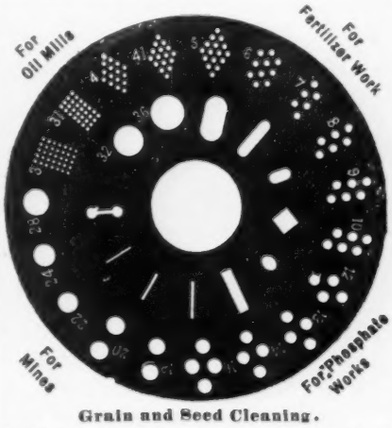

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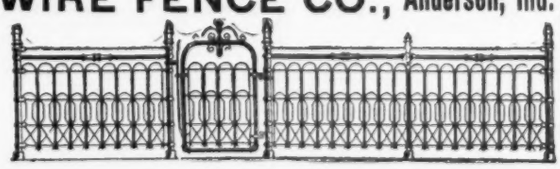

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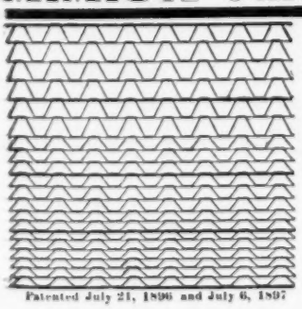

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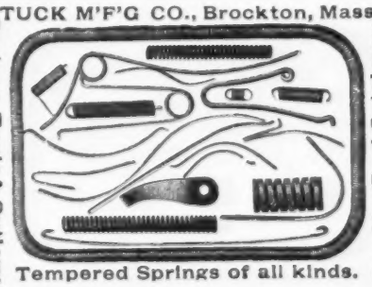

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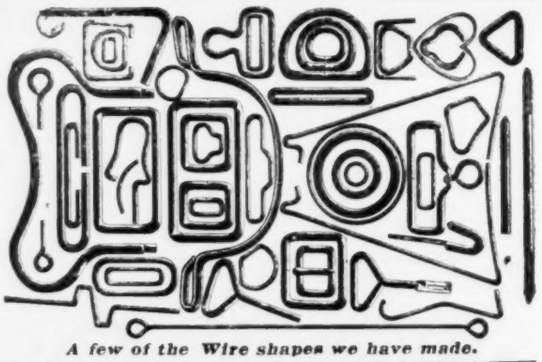

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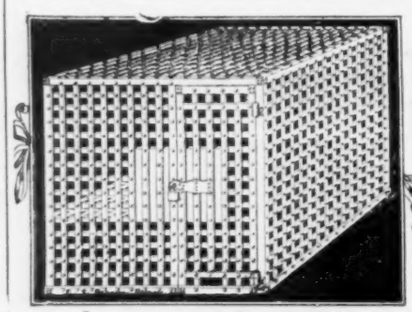

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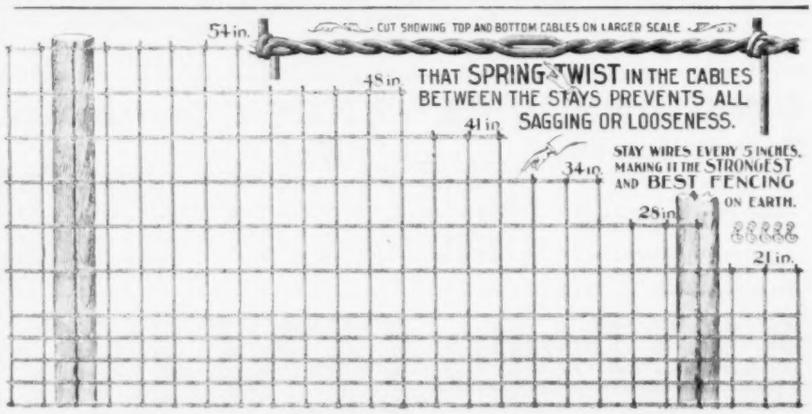

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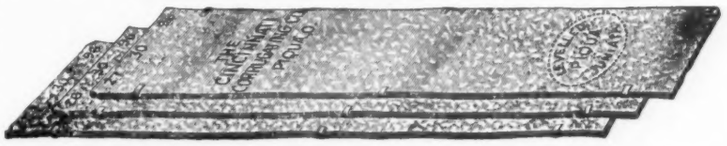

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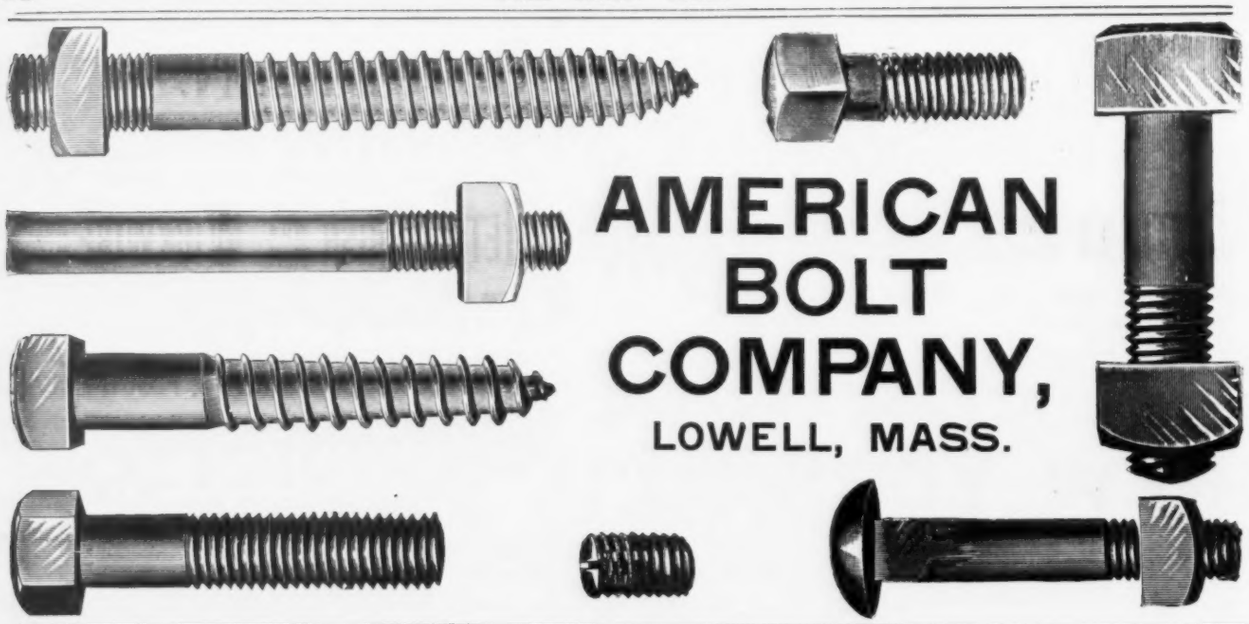

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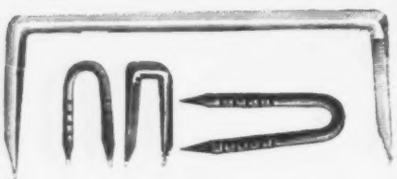

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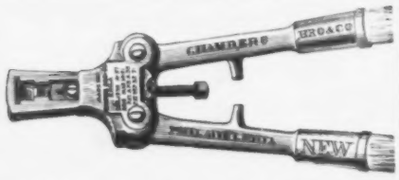

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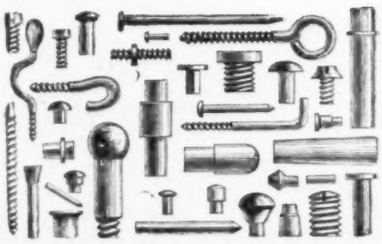

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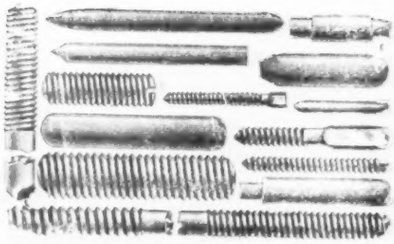

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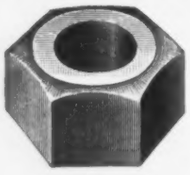

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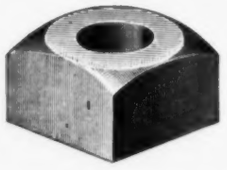

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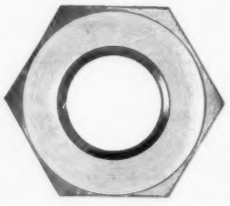

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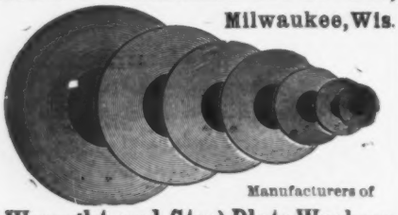

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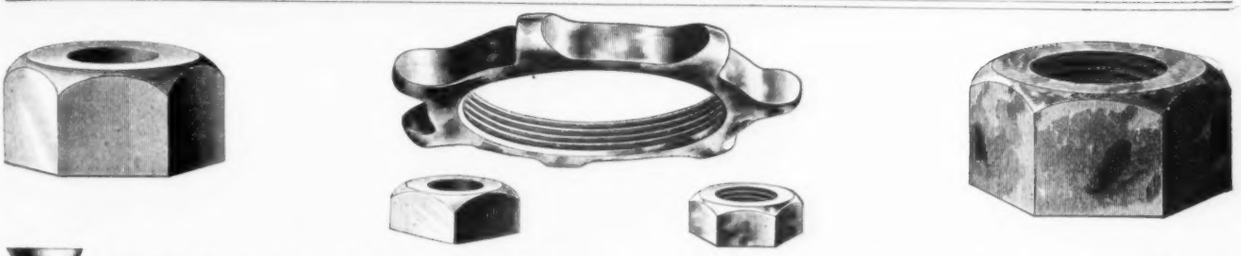

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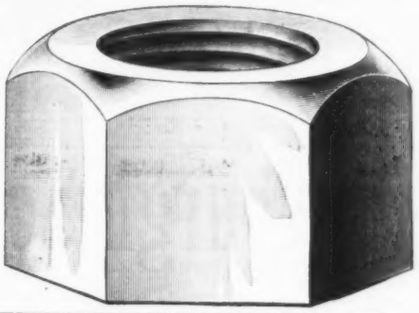

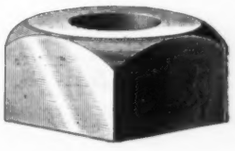

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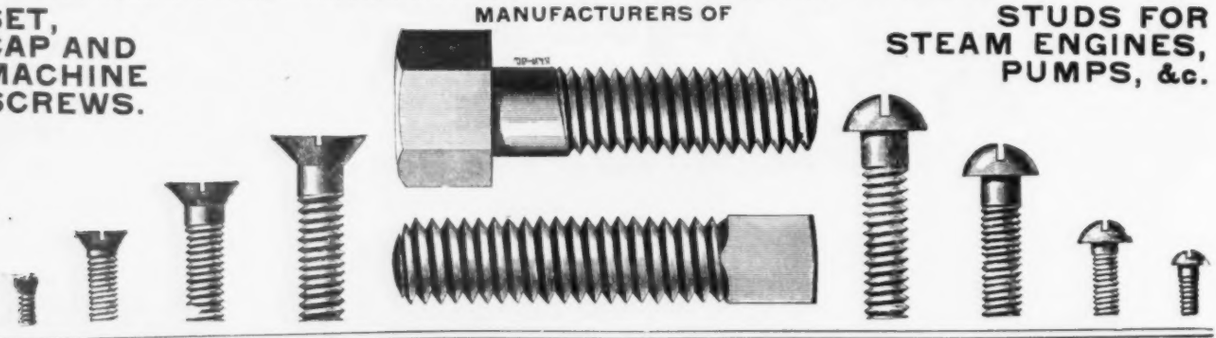

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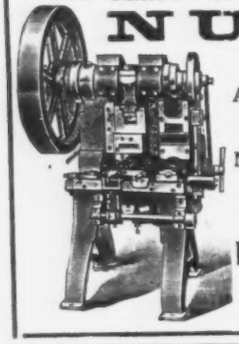

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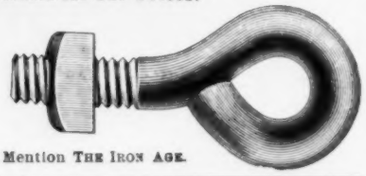

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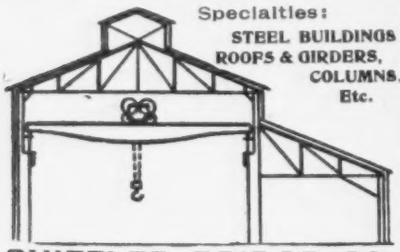

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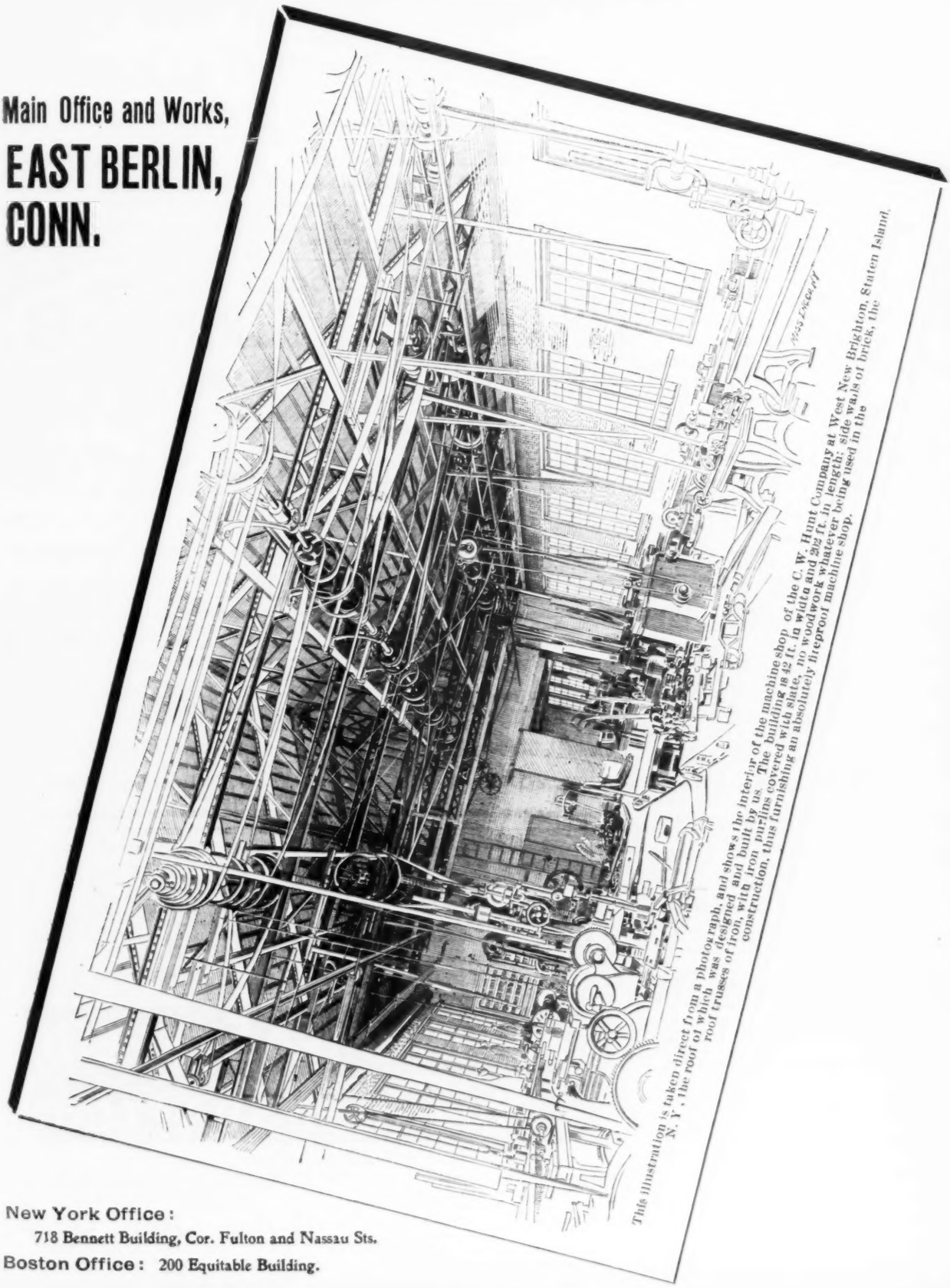

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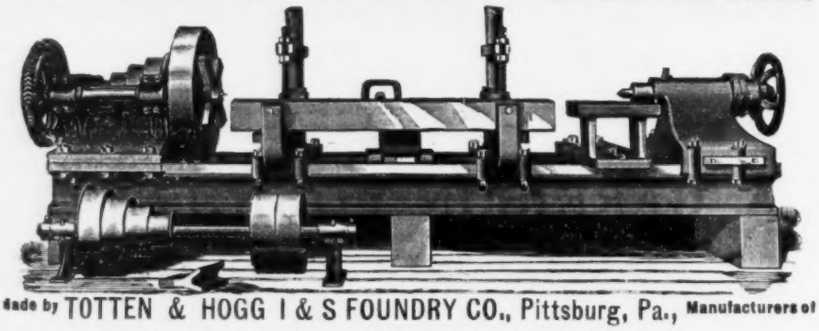

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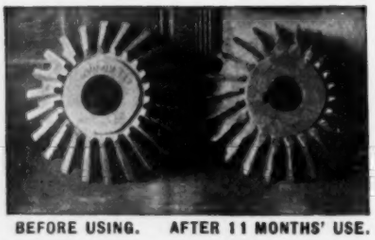

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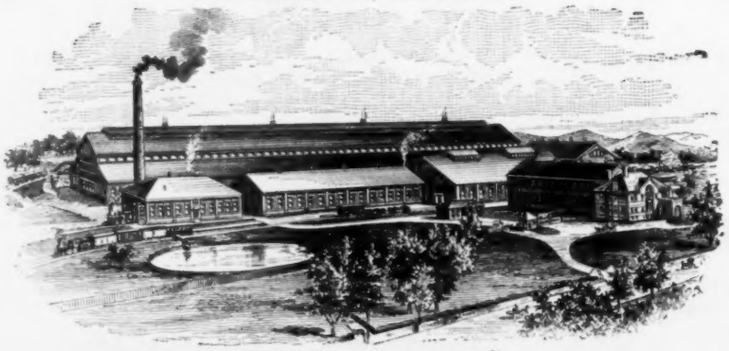

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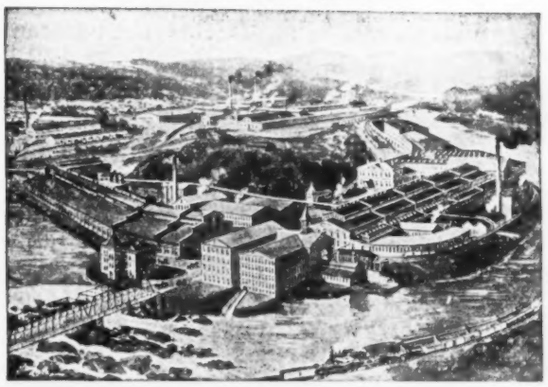

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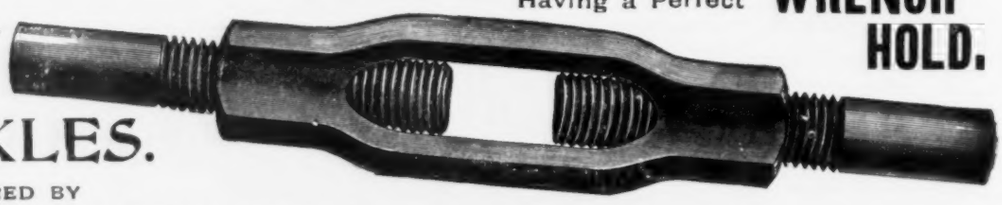

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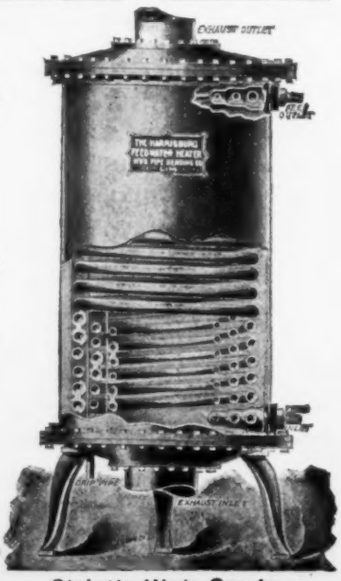

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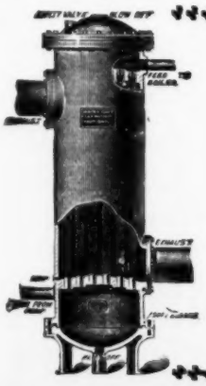

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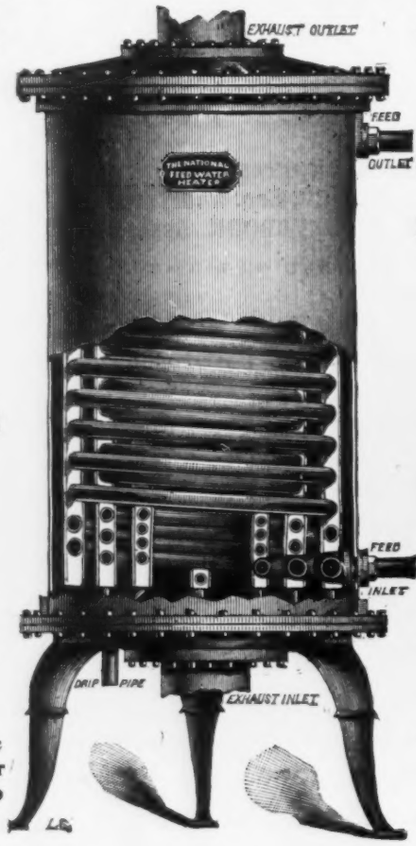

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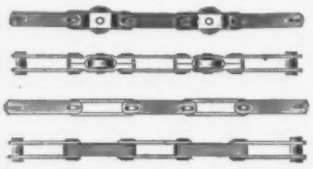

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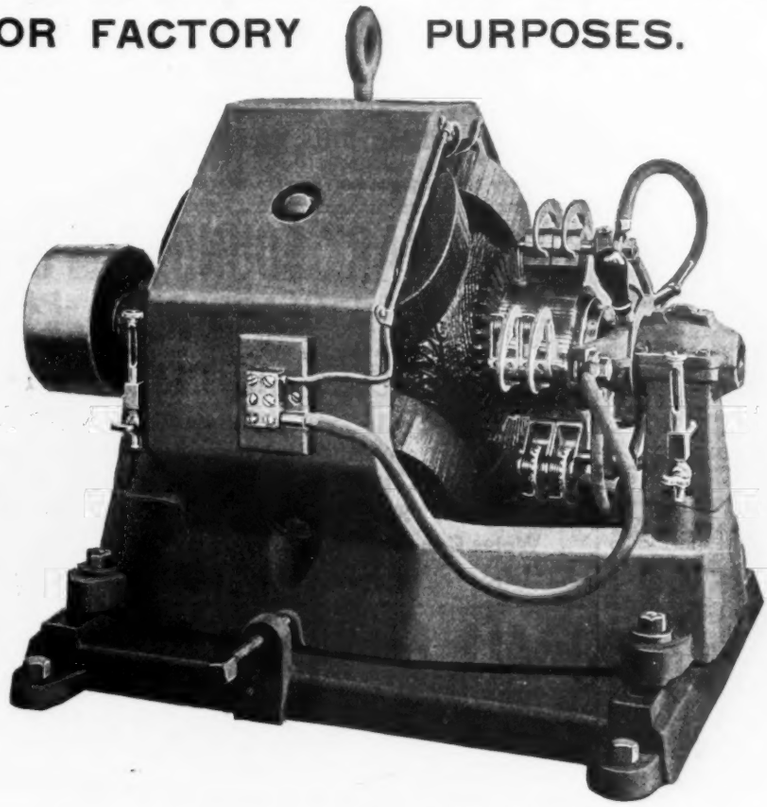

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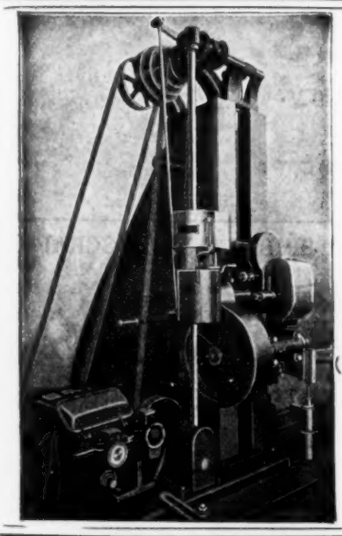

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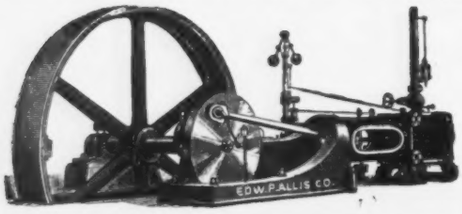

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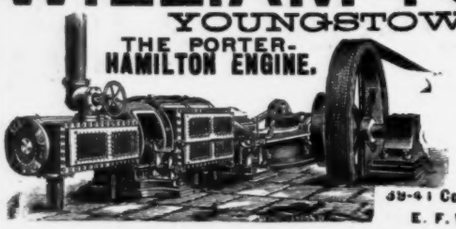

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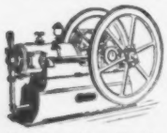

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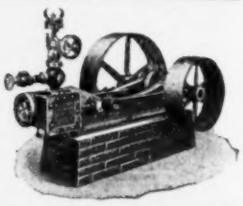

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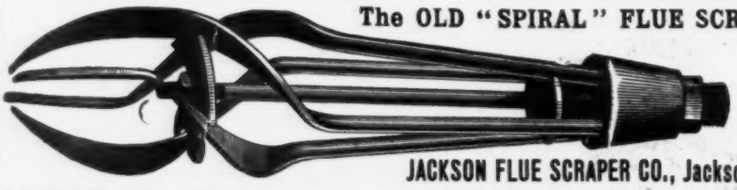

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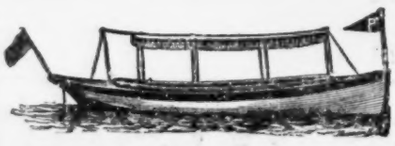

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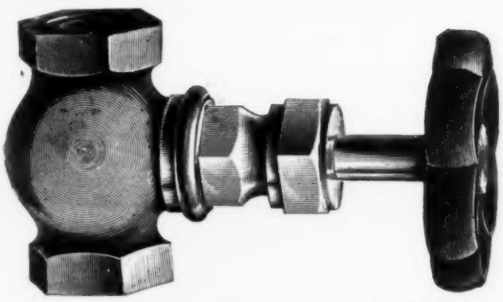

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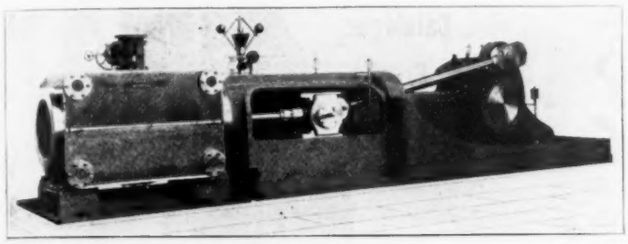

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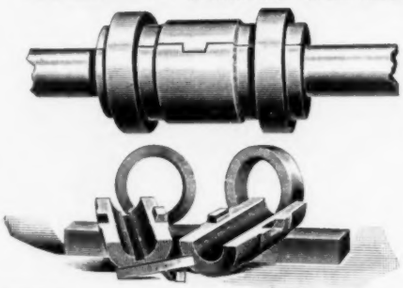

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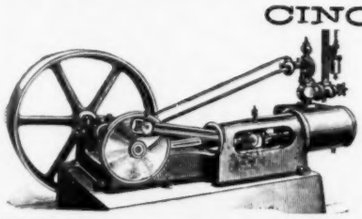

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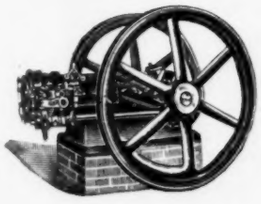

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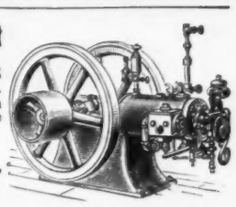

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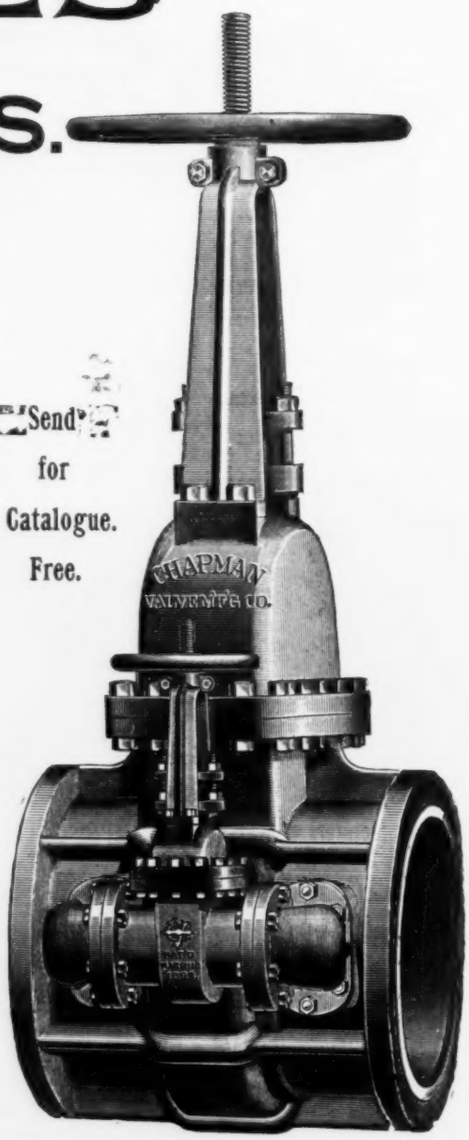

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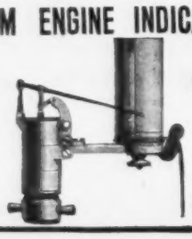

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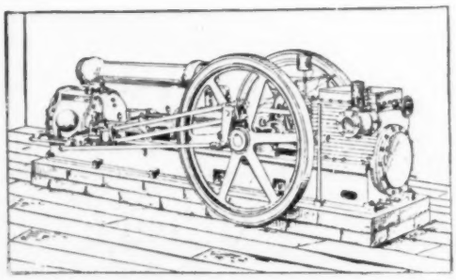

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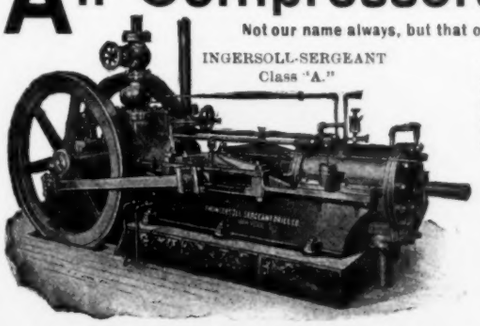

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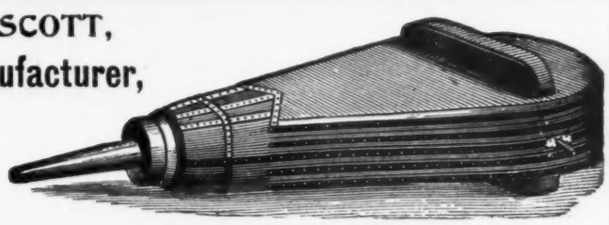

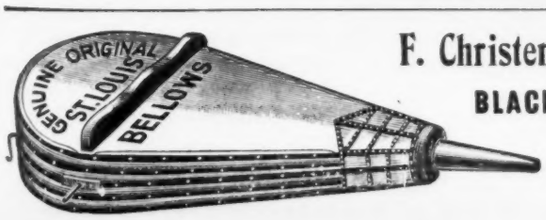

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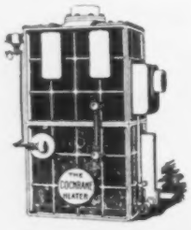

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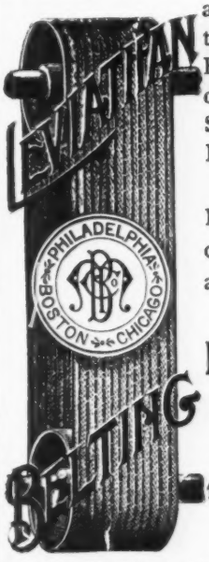

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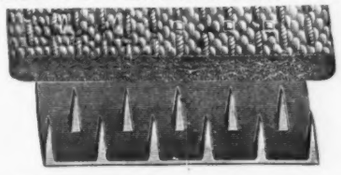

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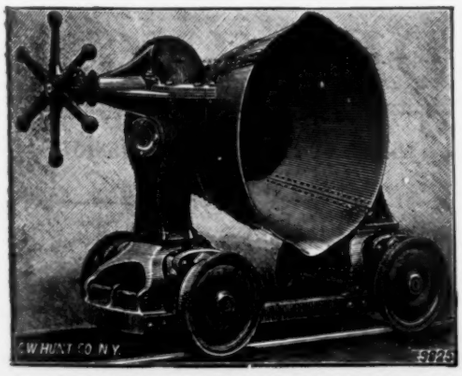

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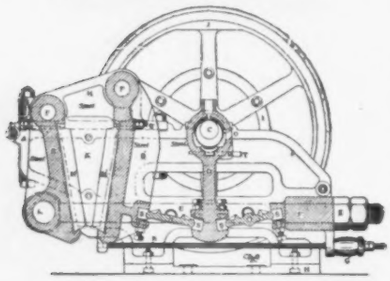

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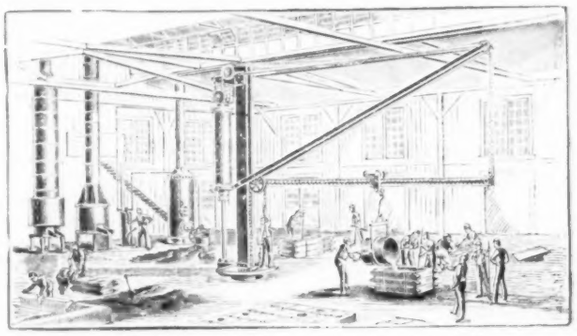

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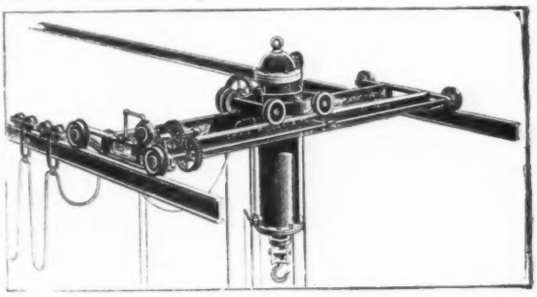

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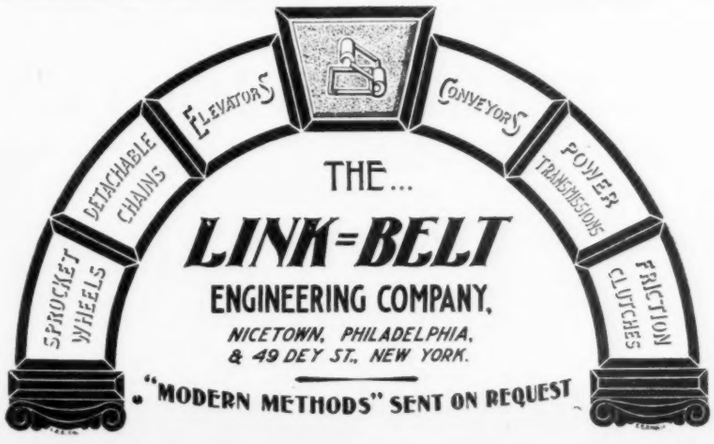

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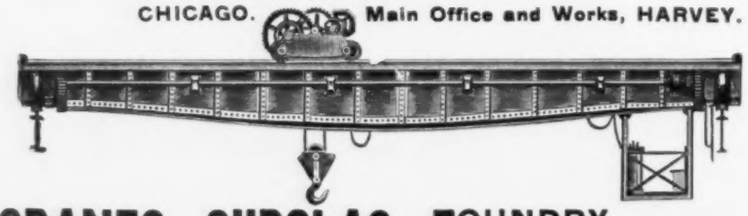

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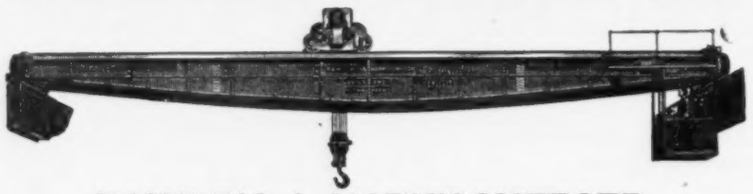

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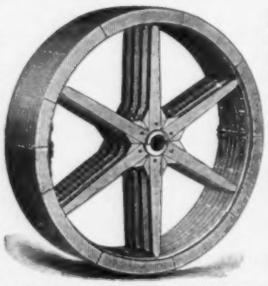

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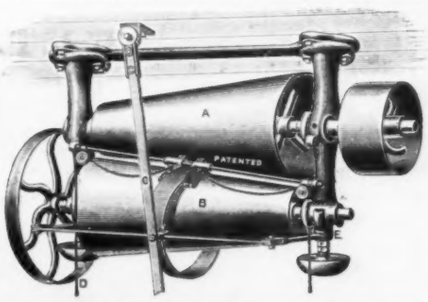

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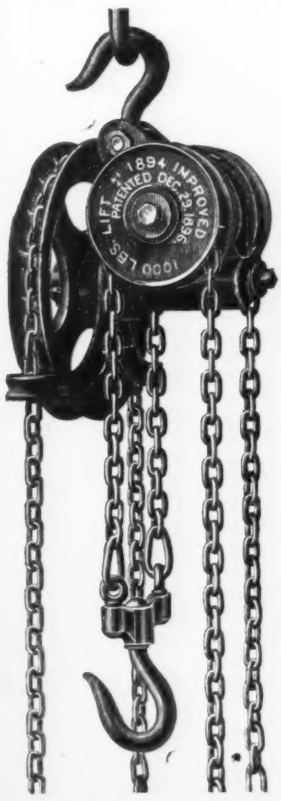

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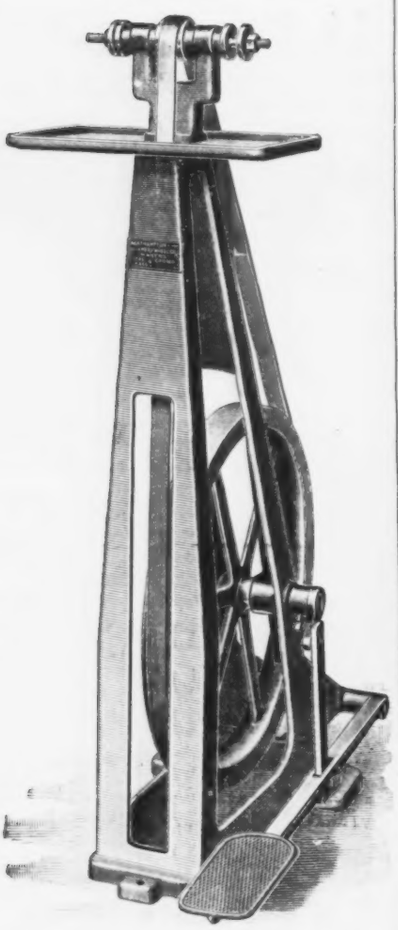

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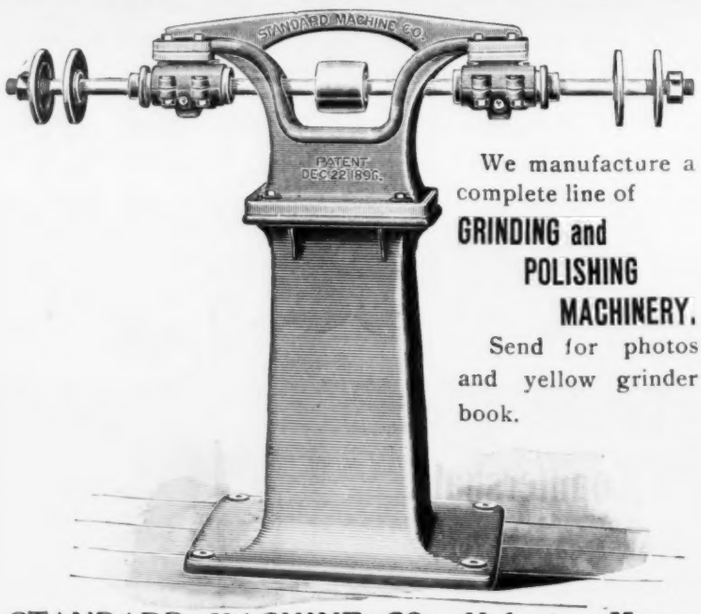

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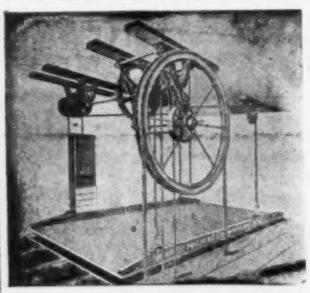

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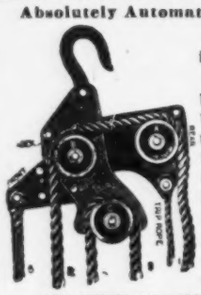

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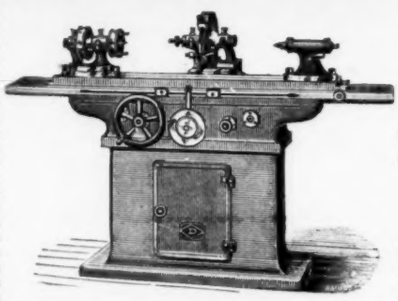

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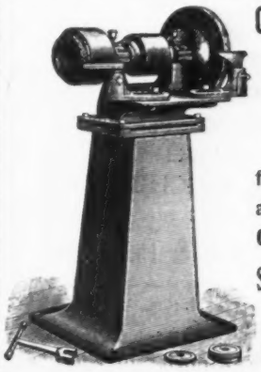

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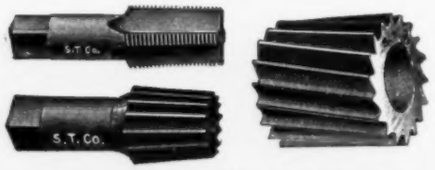

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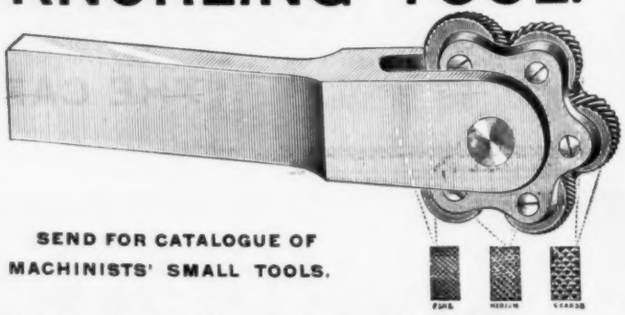

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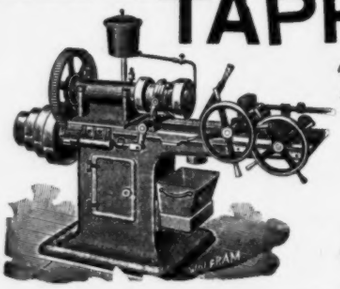

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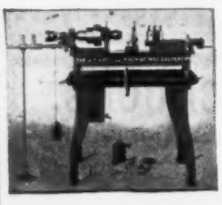

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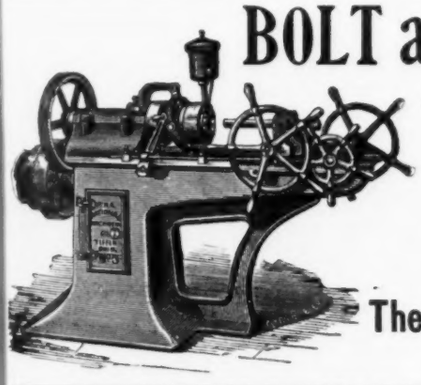

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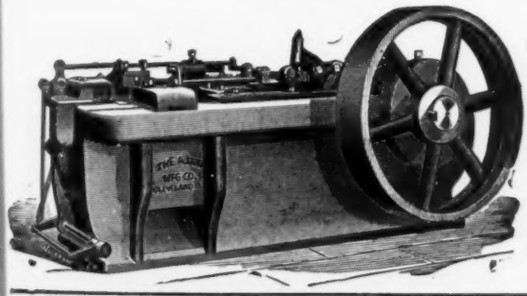

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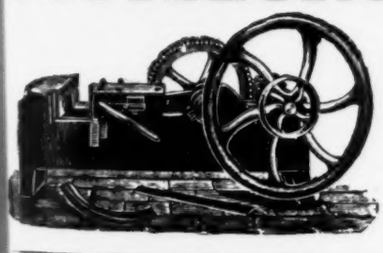

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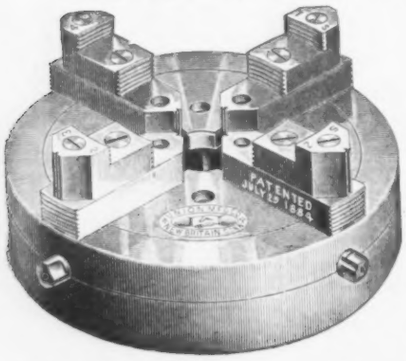

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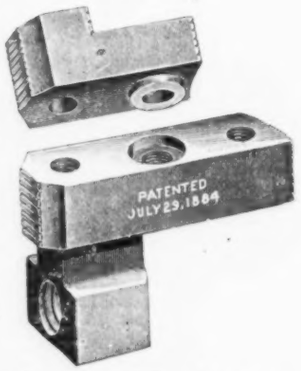

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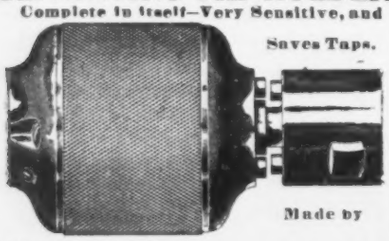

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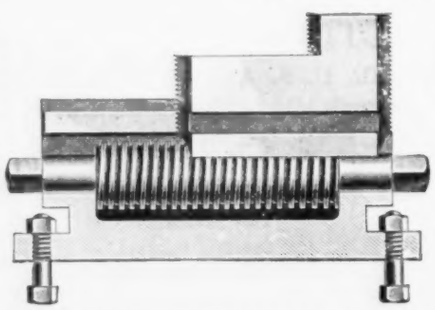

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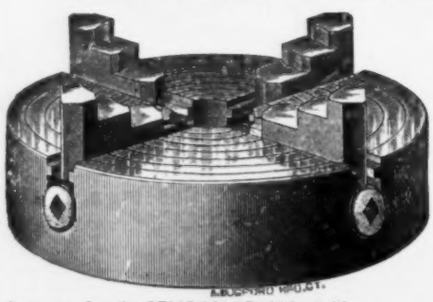

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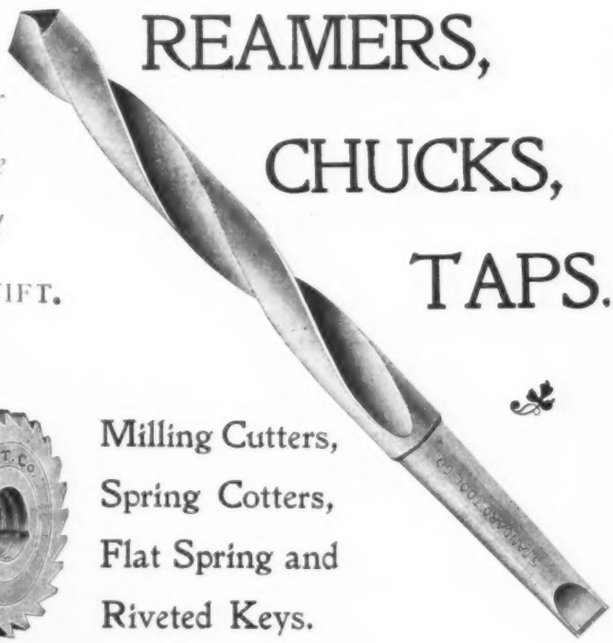

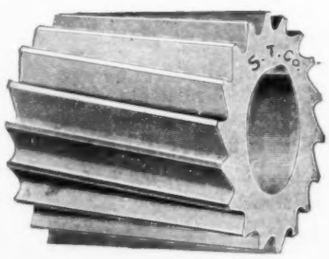

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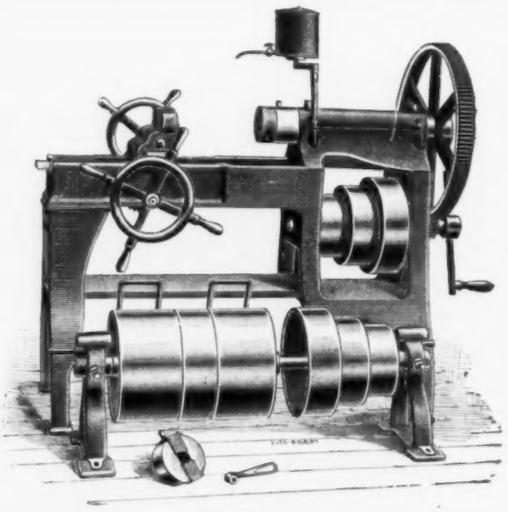

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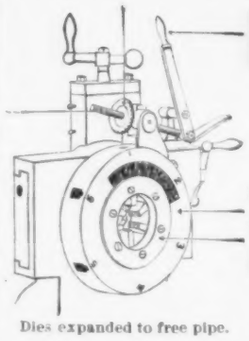

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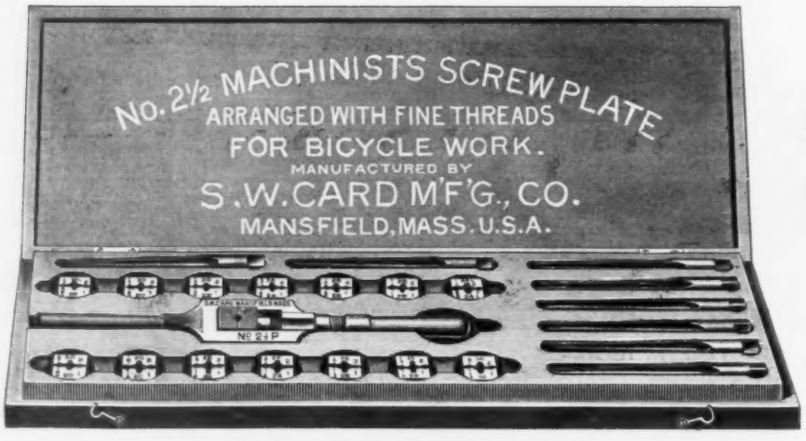

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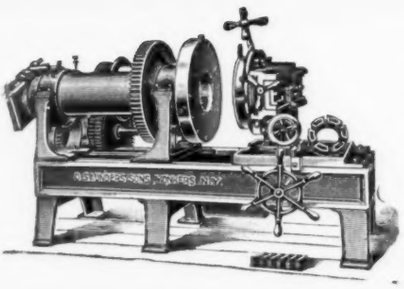

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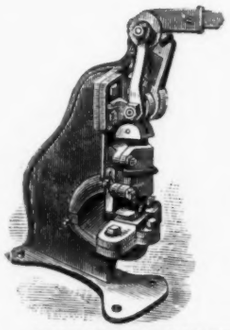

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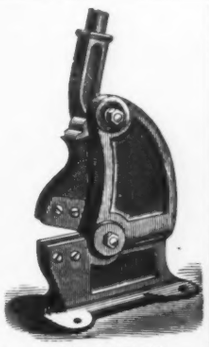

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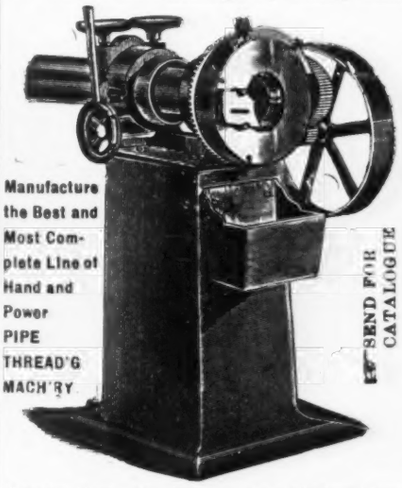

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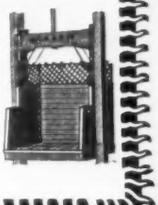

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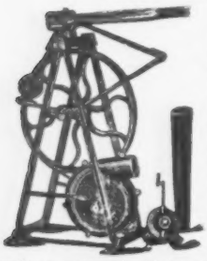

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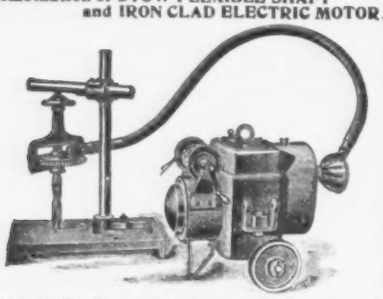

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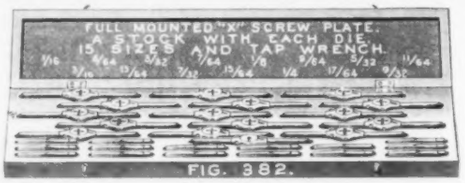

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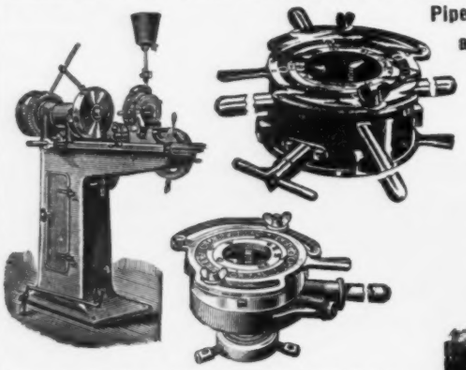

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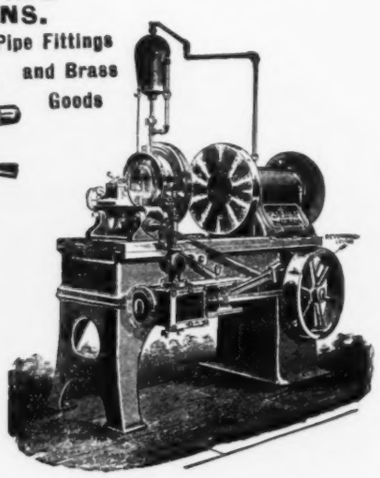

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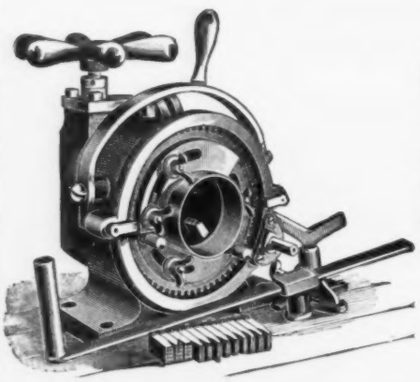

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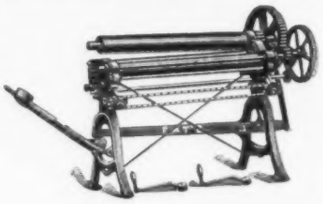

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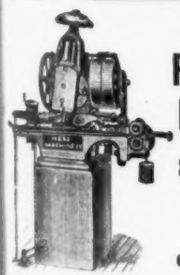

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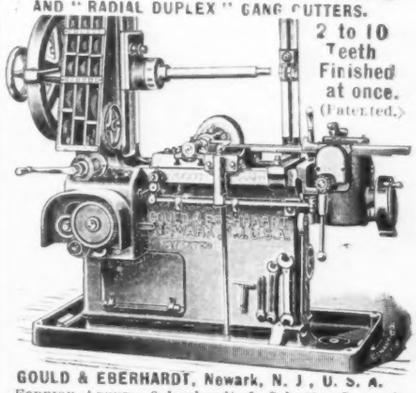

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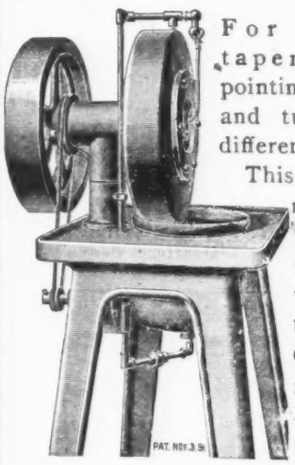

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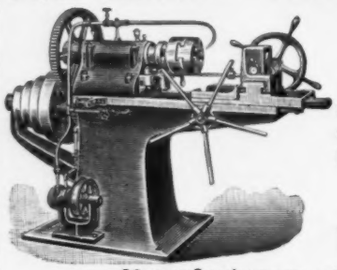

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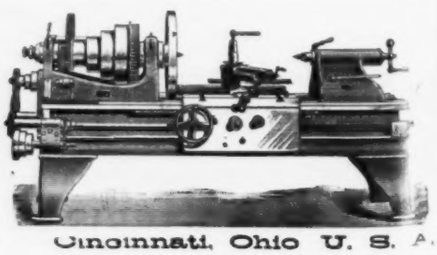

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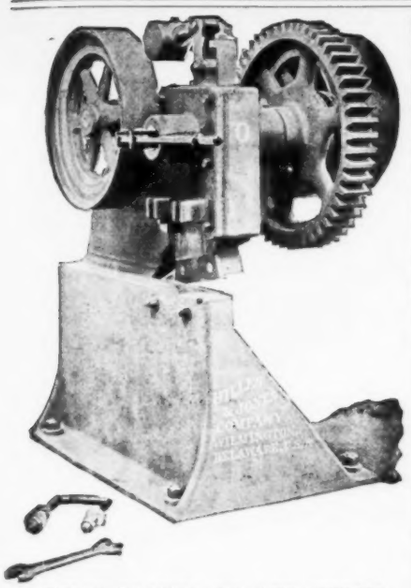

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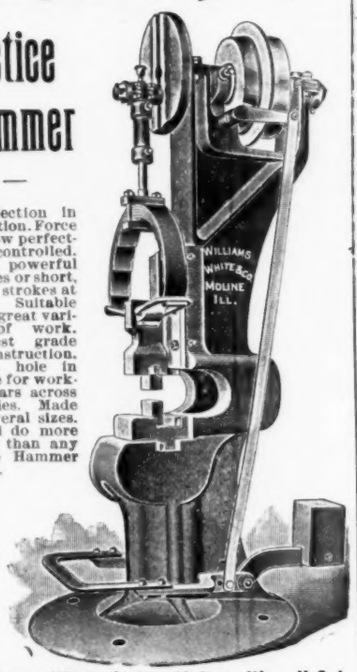

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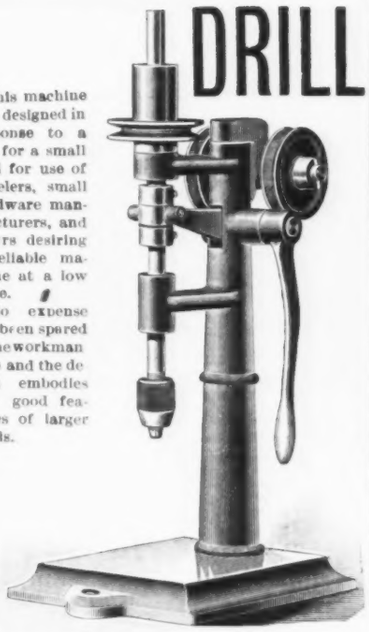

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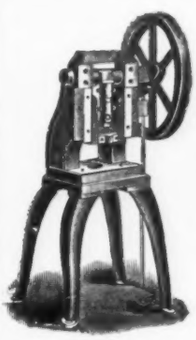

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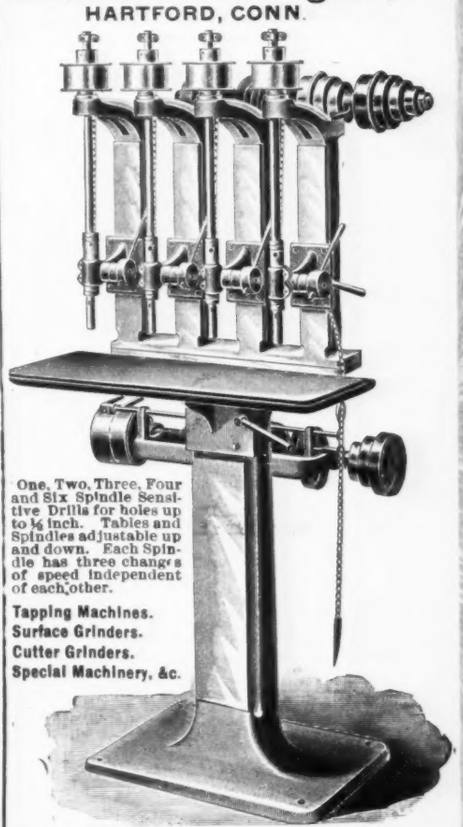

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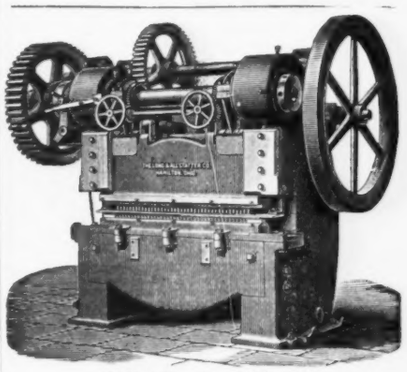

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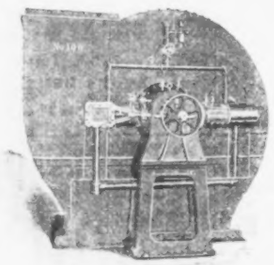

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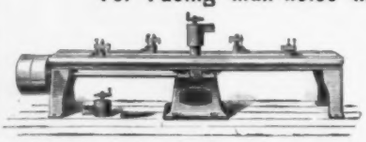

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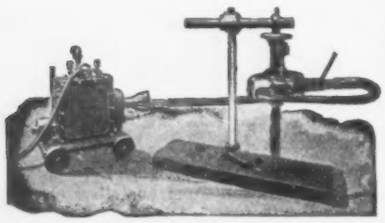

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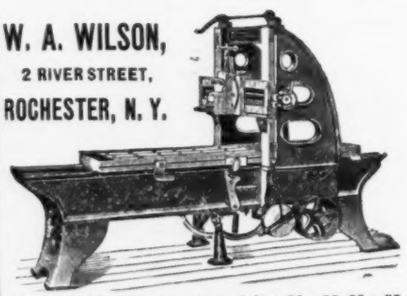

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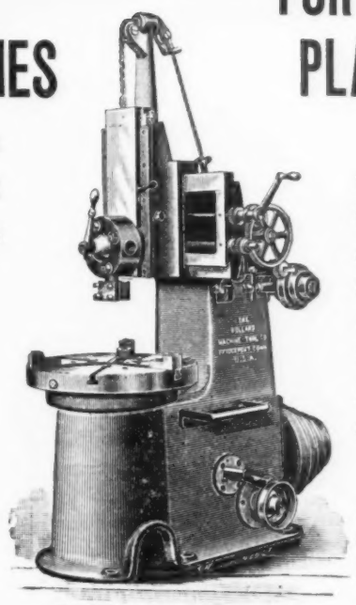

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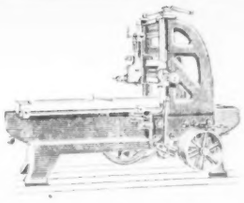

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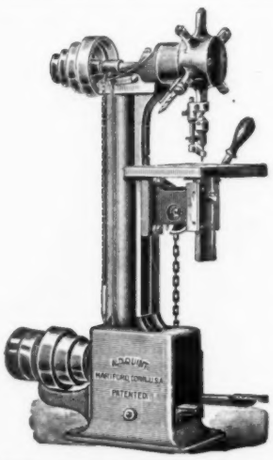

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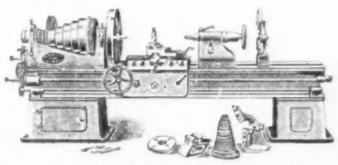

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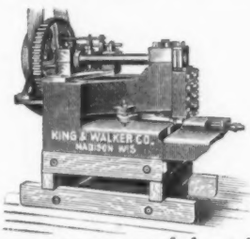

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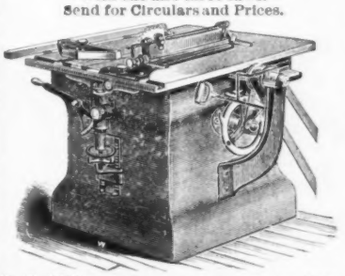

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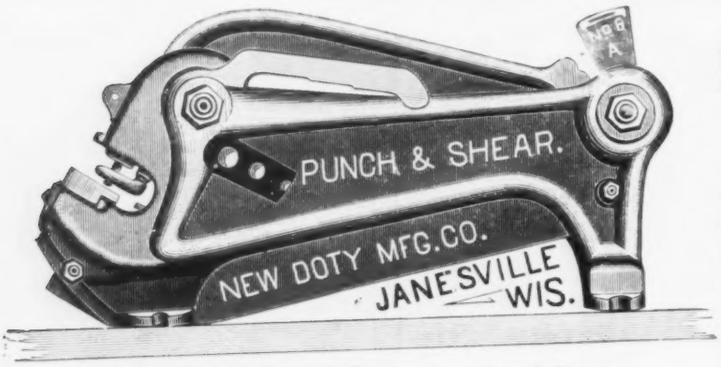

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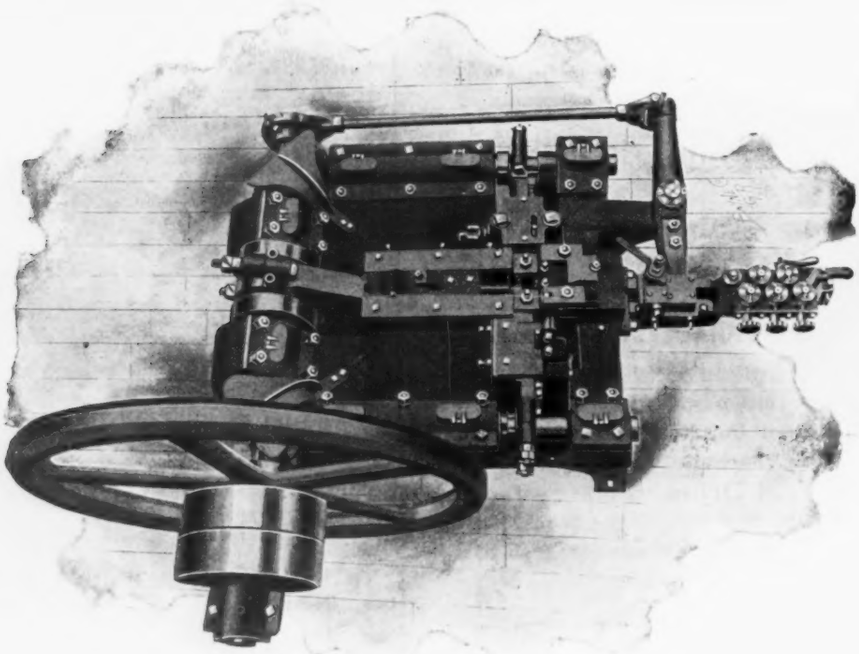

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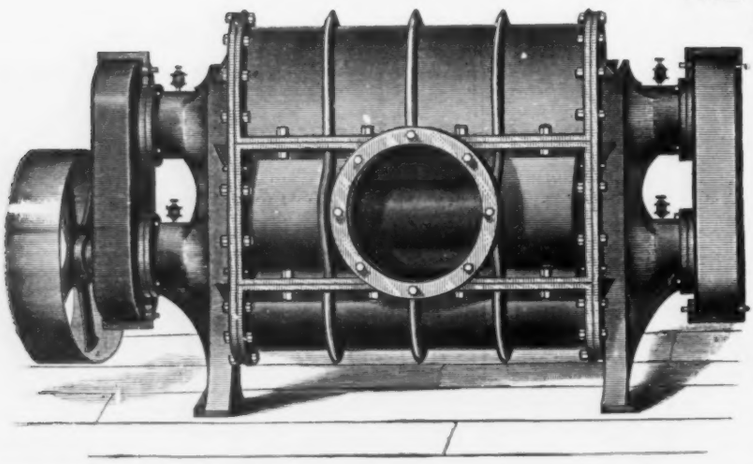

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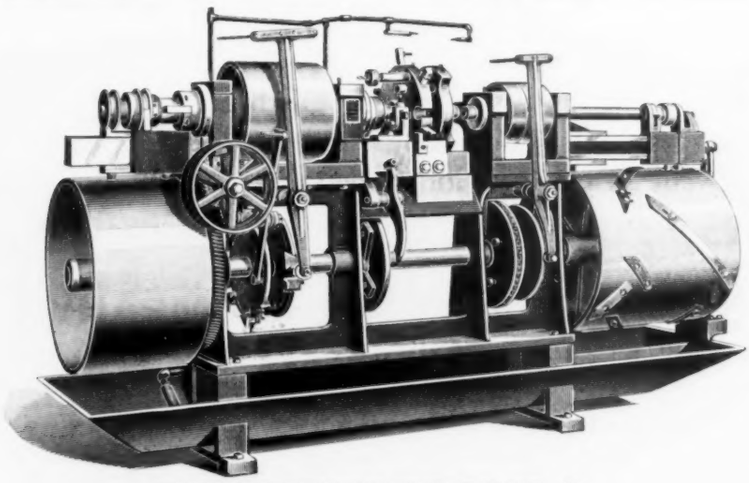

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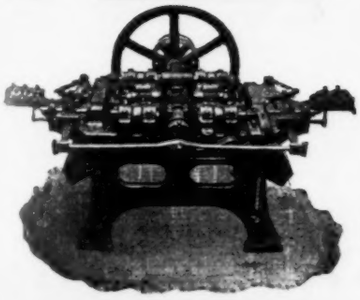

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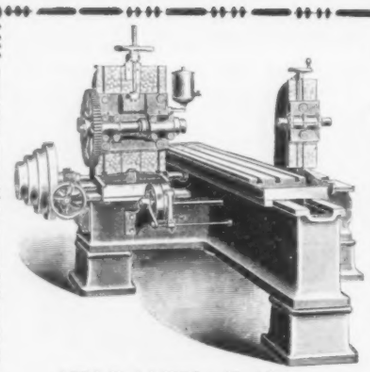

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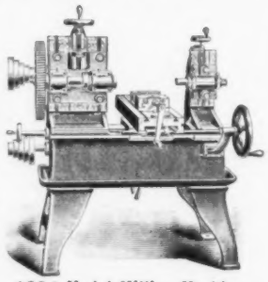

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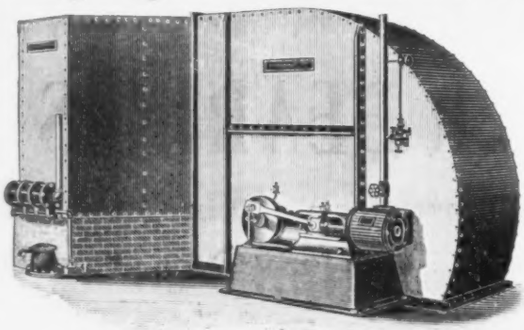

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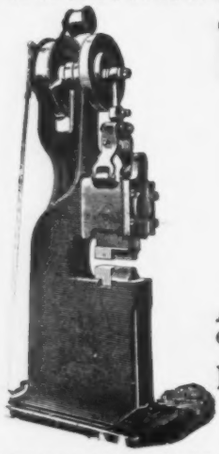

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Power Hammer

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Our customers tell.

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St. Johnsbury, Vt.,
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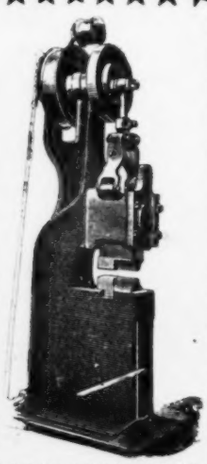
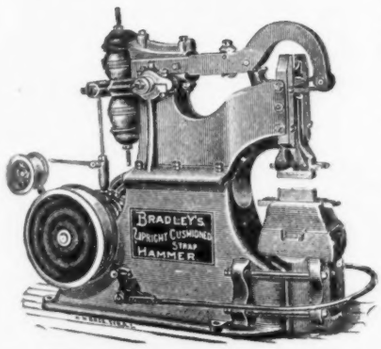


BRADLEY HAMMERS



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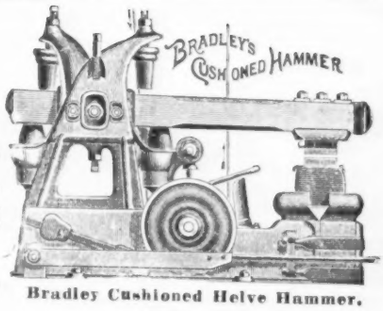
are made in Helve and Upright styles with heads weighing 15 to 500 pounds and forge stock ⅛ to 5 inches diameter.

Each contains ⅓ to ½ more material than any other of same rating.

Their Anvil Blocks weigh nearly or quite double those of other Hammers.

Their output is guaranteed 25 per cent. greater than is possible with other Hammers of same rating.

They are the highest in price but the cheapest in fact.



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With Adjustable Apron,

AND A COMPLETE LINE OF

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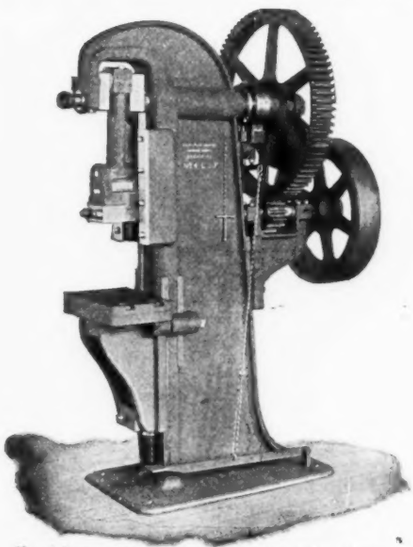
No. 4 Long Stroke Press with Adjustable Apron. For Reducing, Forming and similar operations. Weight, 3,800 lbs.

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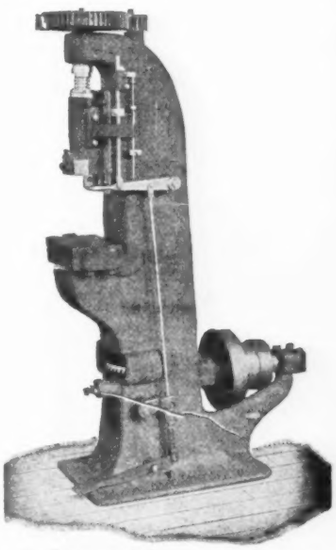
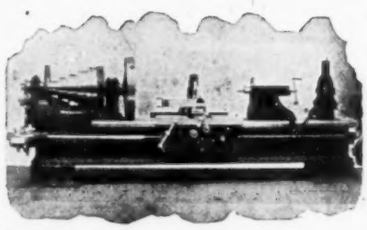

No. 2 Automatic Power Screw Press for Broaching Holes of Irregular Shapes.



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Sizes 14 to 42 inch swing. Beds in Even Lengths
You just slide the gear on the main-shaft, at the left, opposite the thread desired, as shown on the index plate; "press the button" into the hole shown by the hole index, and there you are! Any one of 40 threads; any one of 40 different feeds.

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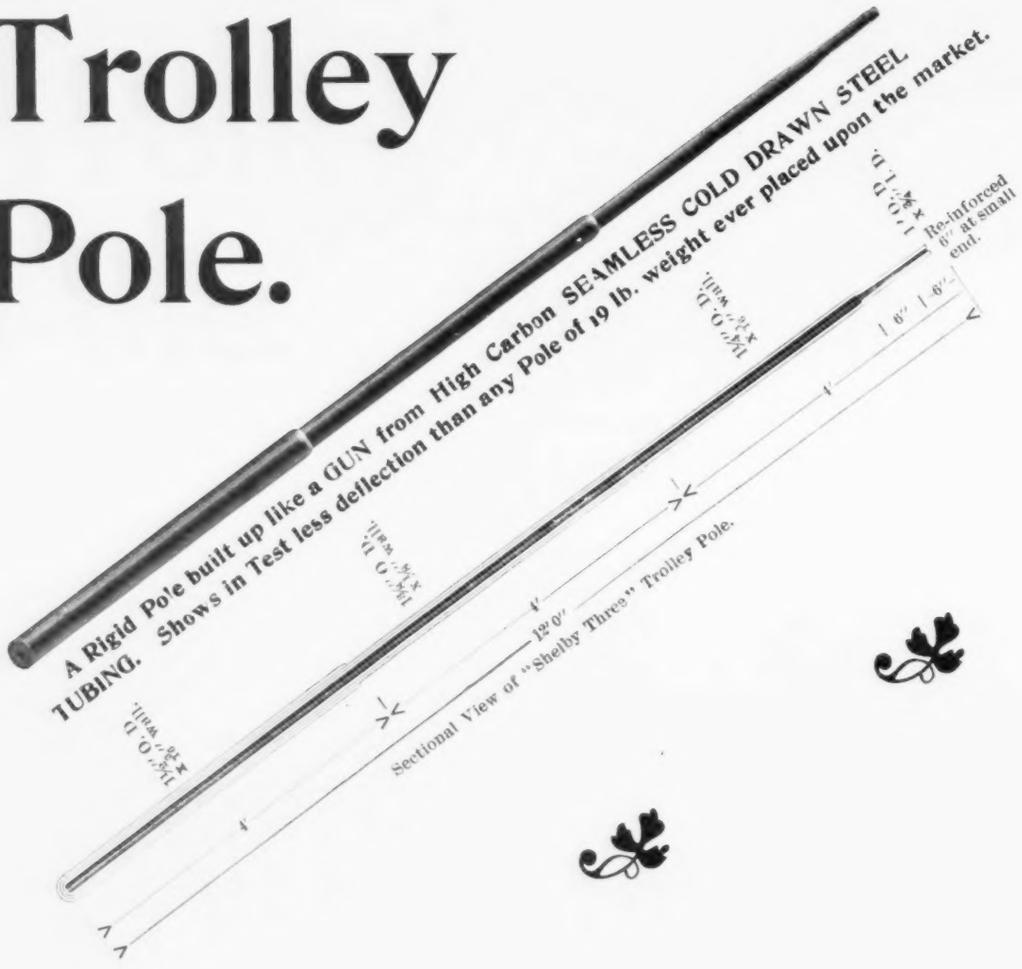

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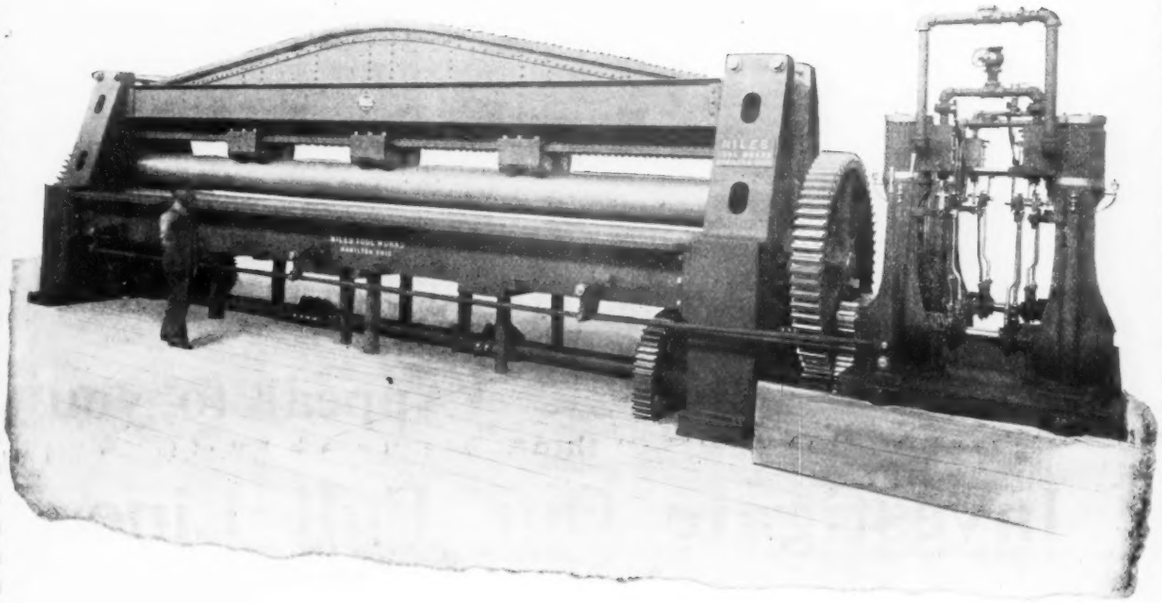

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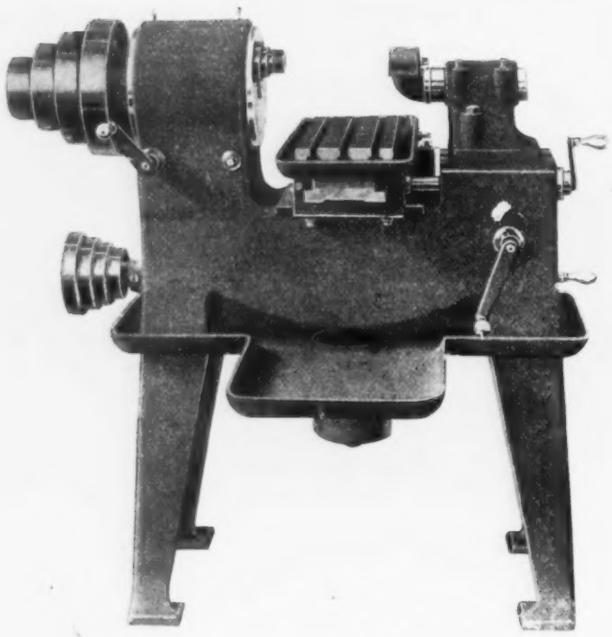

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Great Rigidity.
Length can be milled, 15".
Extreme height of spindle from platen, 7⅜.
Code word, with oil pan, John.
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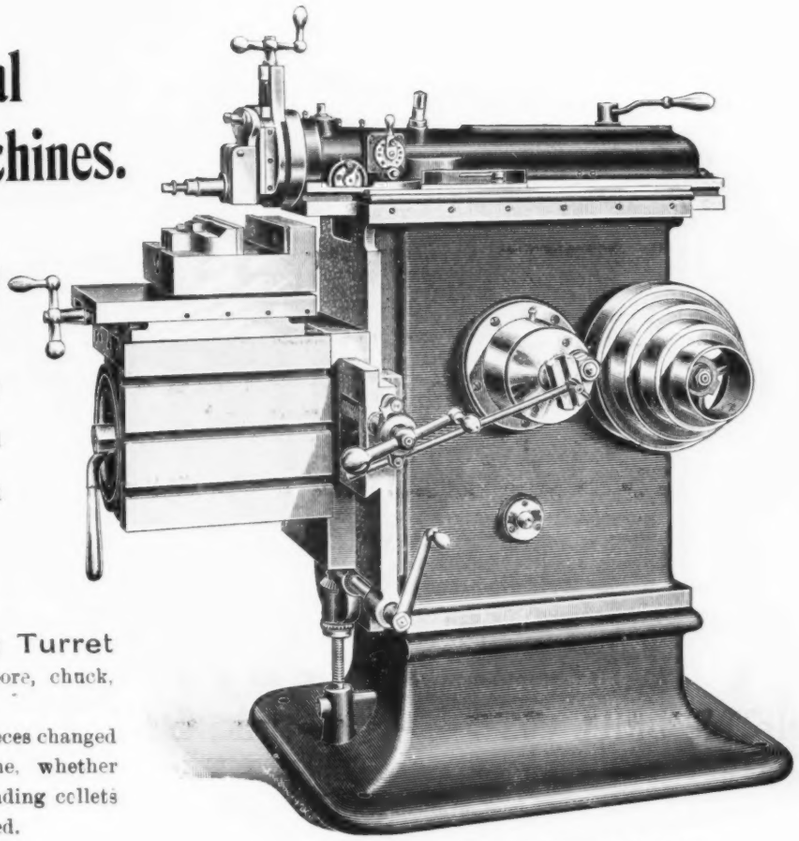

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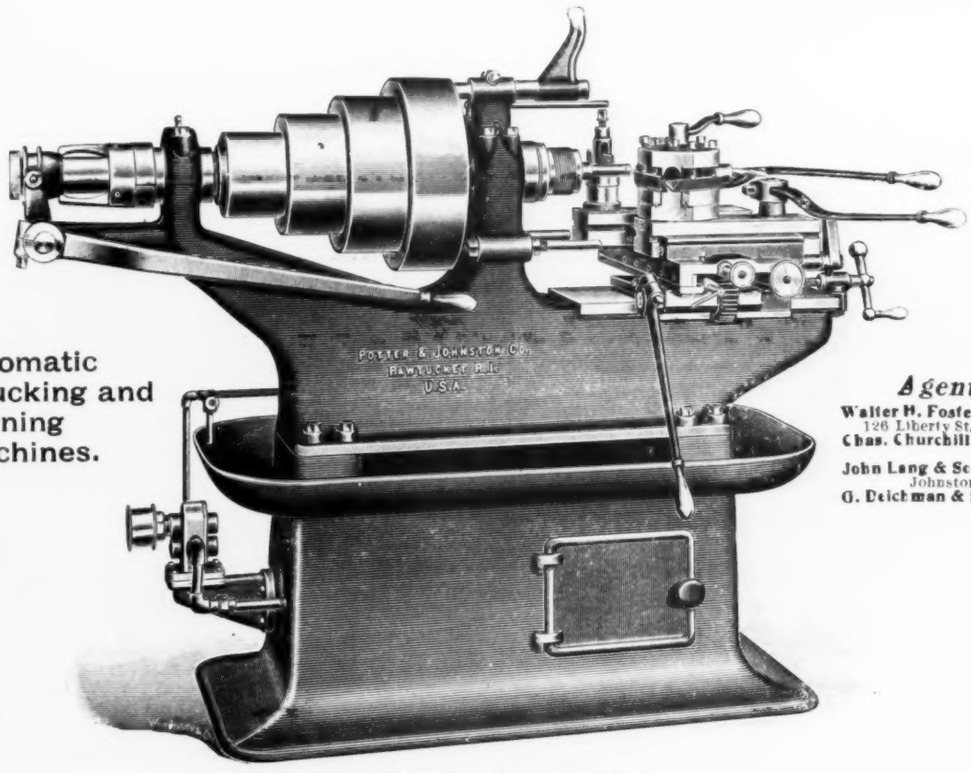
All work is done and all pieces changed without stopping the machine, whether the internal collets, the expanding collets or the lever chuck is being used.



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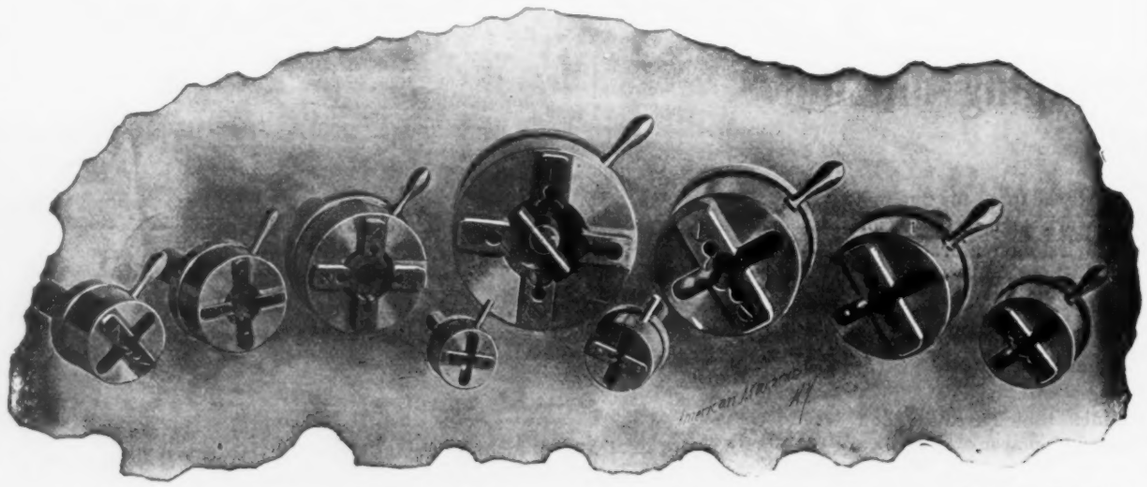

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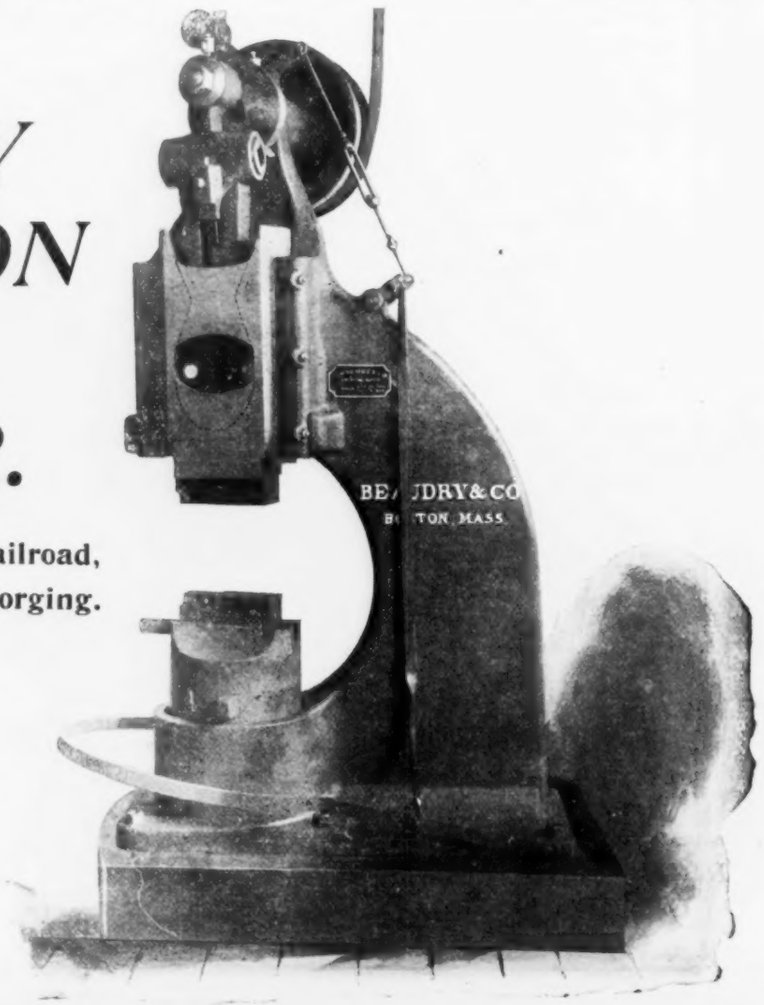

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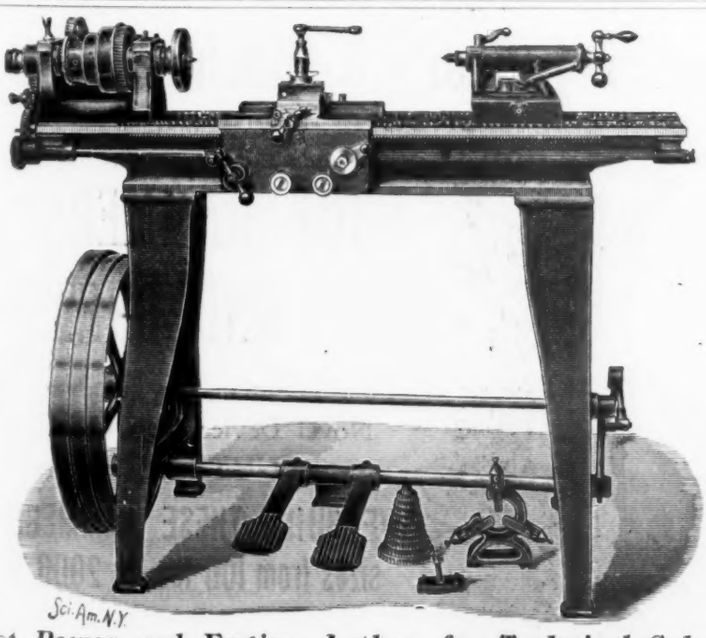

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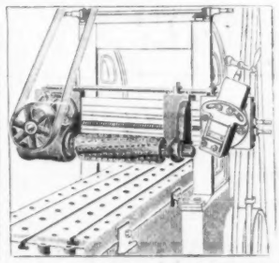

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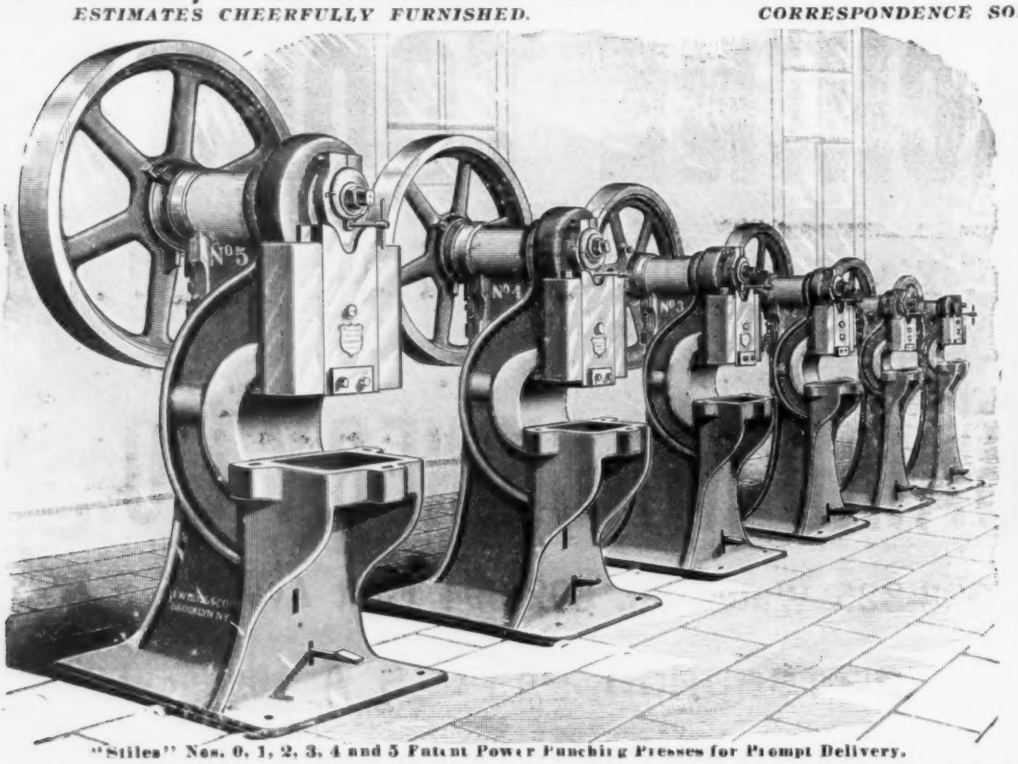

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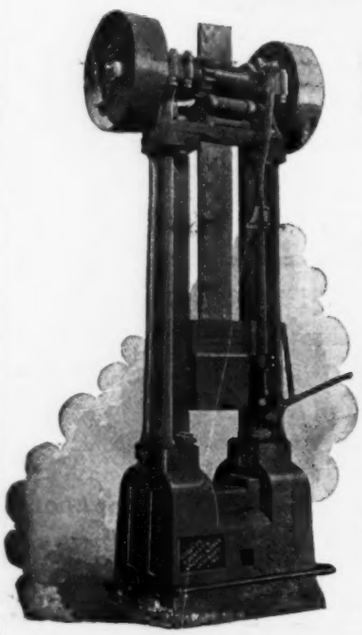

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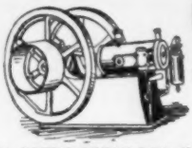

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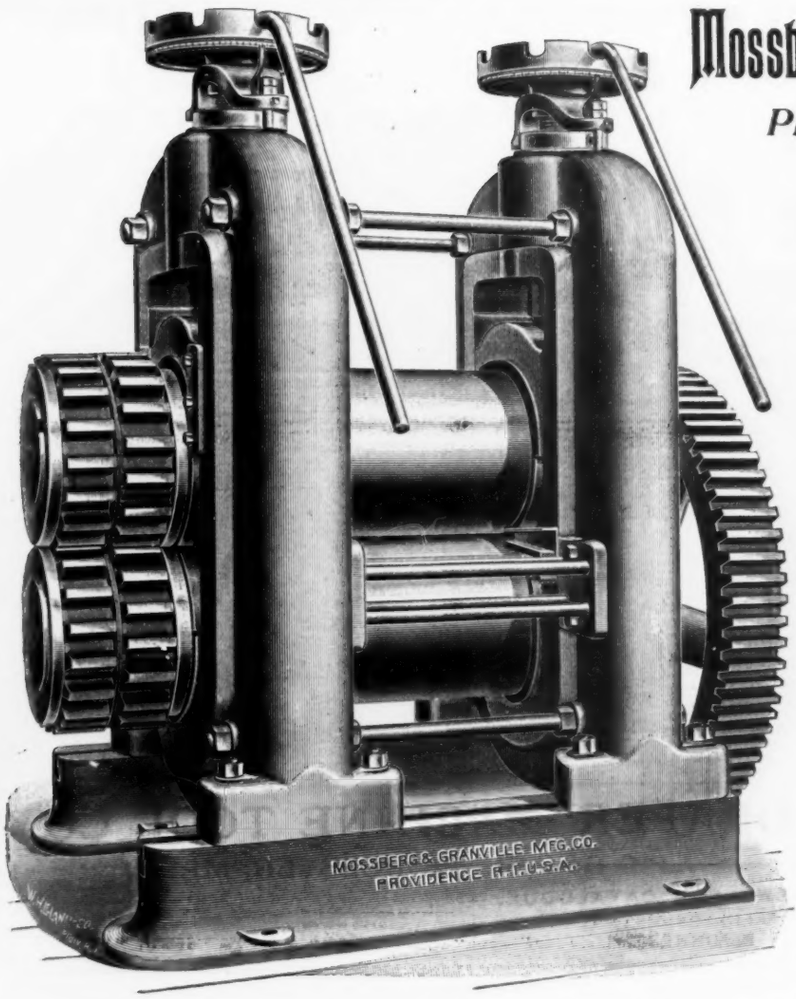

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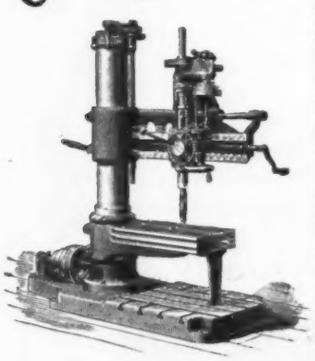

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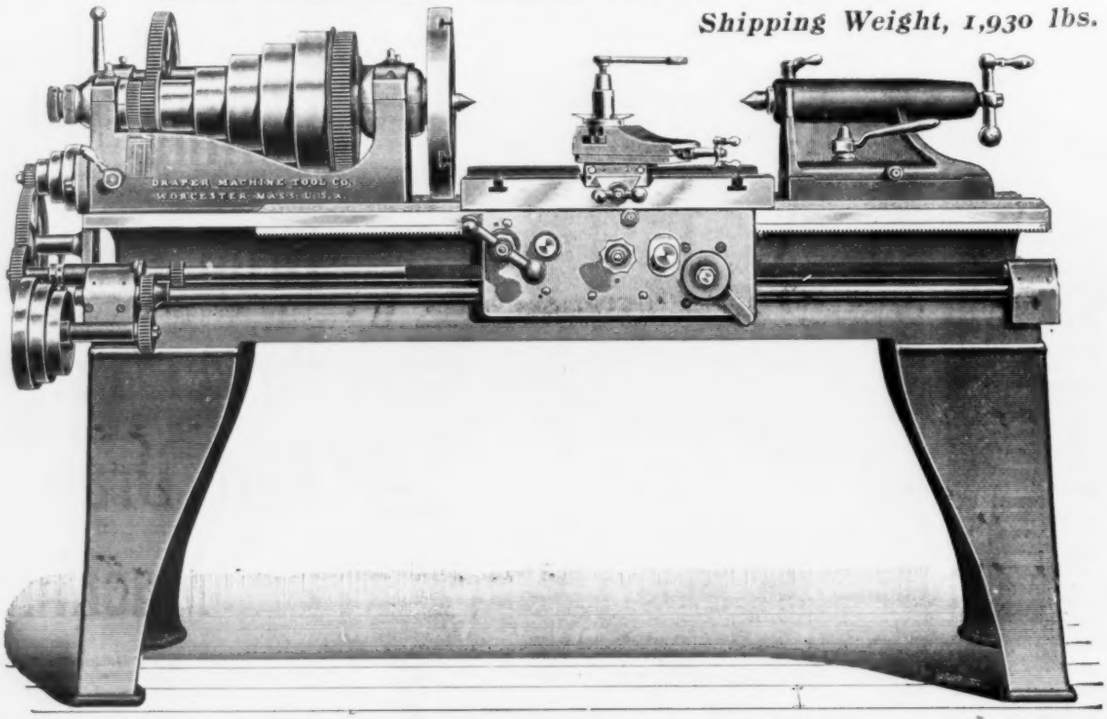

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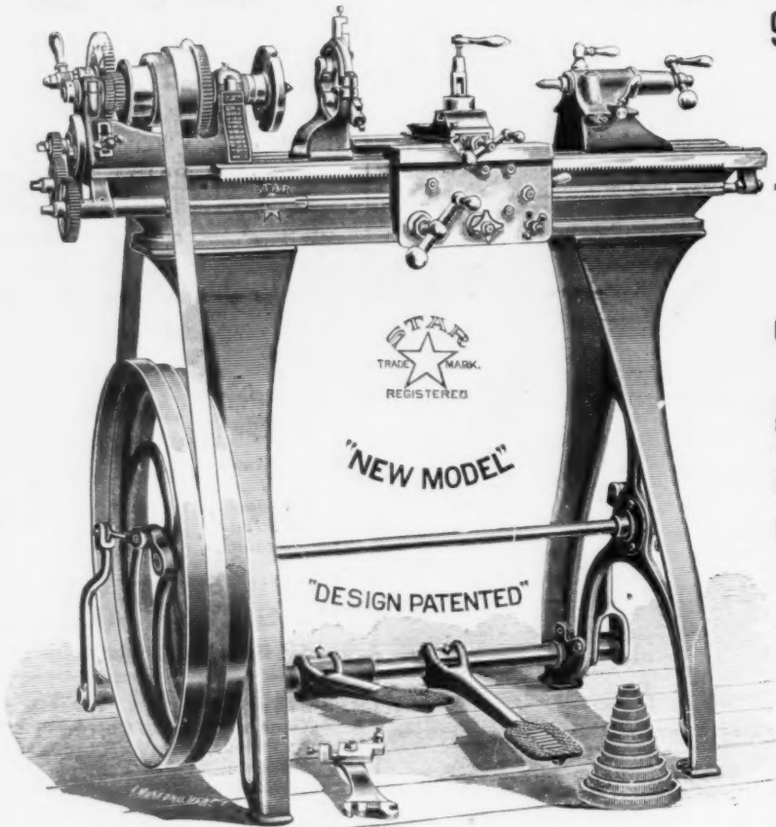

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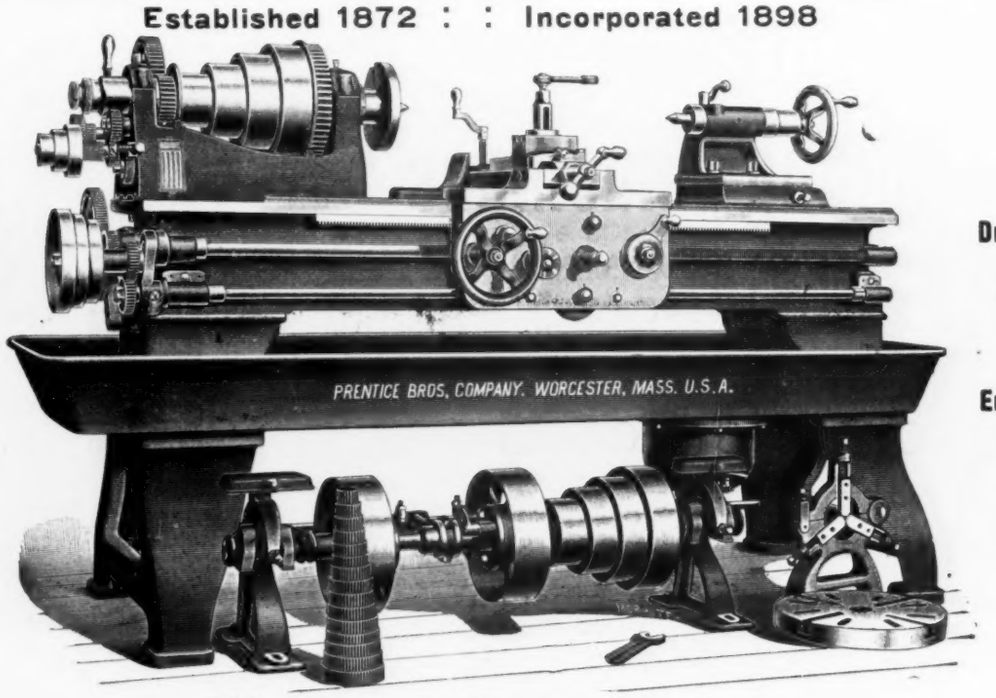

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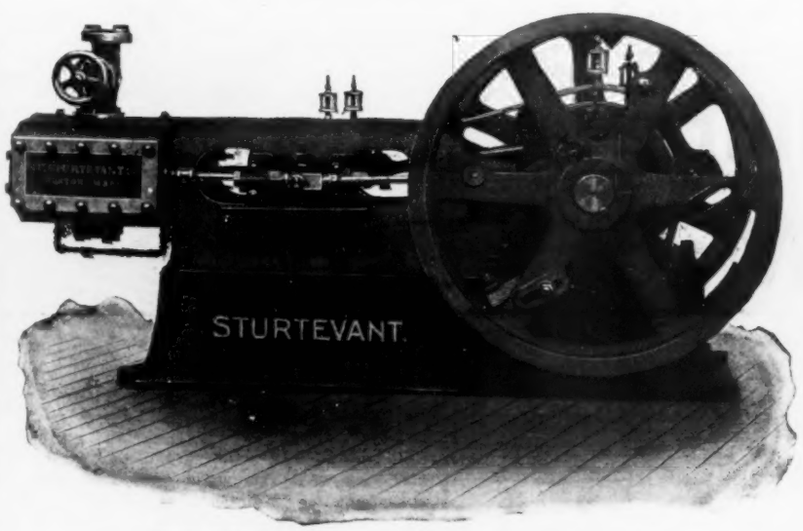

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HORIZONTAL and VERTICAL STEAM ENGINES,
1 to 250 Horse Power.
ELECTRIC MOTORS and GENERATORS,
GENERATING SETS,
1 to 100 K. W.
BLOWER SYSTEM of HEATING, DRYING and VENTILATING,
DUST COLLECTORS and complete systems for the removal of dust,
STEAM TRAPS, EXHAUST HEADS, etc., etc.

B. F. Sturtevant Company,

Works: **BOSTON, MASS., U. S. A.**

Warerooms:

BOSTON, 34 Oliver St.
NEW YORK, 131 Liberty St.
PHILADELPHIA, 135 No. Third St.
CHICAGO, 16 So. Canal St.
LONDON, 53 Queen Victoria St.
GLASGOW, 21 W. Nile St.
BERLIN, 4 Neue Promenade.
STOCKHOLM, 2 Kungsholmstorg.
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WE ALSO BUILD

Screw Thread - - Rolling Machines

DESIGNED ON SCIENTIFIC PRINCIPLES,

With or Without

Automatic Feeds.

Rolled threads on wire and screws are quite as satisfactory in most cases as cut threads, and cheaper by far.

E. J. MANVILLE MACHINE CO.,

WATERBURY. CONN.

BROWN & SHARPE MFG. CO,

PROVIDENCE, R. I., U. S. A.

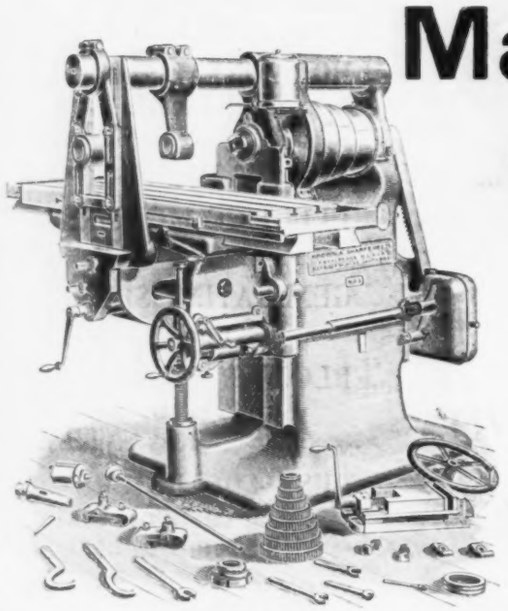
Plain Milling Machines

FOR

MANUFACTURING PURPOSES.

No. 0.

15 Different Styles.



No. 5.

1899 Catalogue

Mailed on Application.

A Few of the Modern Tools at special low prices before moving.

Screw Machine,	Jones & Lamson, "8x," 2½ in. capacity, all attachments.
do.	Bardons & Oliver No. 4, 1 9-16 in. capacity, wire feed, friction head.
do.	Pratt & Whitney No. 1, wire feed.
Milling Mach.,	Brown & Sharpe No. 1, Univ.
do.	Bridgeport, extra heavy.
do.	Garvin, Lincoln pattern.
do.	Garvin No. 12, auto. feed.
do.	Garvin No. 3, hand feed.
Shaper,	Gould & Eberhardt, 12 in crank
do.	Prentiss, 12 in crank, 15 in. friction.
do.	Smith & Mills, 15 in. crank.
Upright Drill,	Prentice, 20 in., plain.
do.	Barnes, 25 in., complete.
do.	New Haven, 28 in , complete.
do.	Prentice, 30 in., complete.
Radial Drill,	84 in. swing, latest, with tapping attachment.
do.	88 in. Semi-univ., "Box Co.'s."
do.	98 in. Niles, plain.

Universal Grinding Mch., Brown & Sharpe.
Hor. Boring Machine, Nicholson & Waterman.
Planers, 18 to 40 in. wide, all sizes.
Lathes, 12 to 50 in. swing, all sizes.
Boiler Plate Planer, 11½ ft., Wm Sellers & Co.
Bending Rolls, 14 ft., latest pattern.

SEND FOR COMPLETE LIST.

J. J. McCabe,
14 Dey St., New York.

ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

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14 in., 16 in. and 22 in. Corliss Engines.
16 in., 20 in. Buckeye Automatic Engines.
100, 250 and 350 H. P. Westinghouse Compound Engines.
50 to 200 H. P. Slide Valve Engines.
14 in., 16 in., 18 in., 20 in., 24 in. and 36 in. Screw Cutting Lathes.
16 in., 20 in., 24 in., 36 in., 54 in. and 60 in. Planers.
36 in., 50 in. and 60 in. Radial Drills.
Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

FRANK TOOMEY,
Nos. 129 and 131 N. Third St., Phila., Pa.

BOILERS.

8 125 H. P. Loco. Style, 100 lbs. steam pressure.
2 100 H. P. Loco. Style (Wooten fire boxes).
7 80 to 100 H. P. Loco. Style, 100 lbs. steam.
1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished.

POULTERER & CO.,
410 Bullitt Bldg., Phila., Pa.

FOR SALE.

26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in. built by C. H. Brown & Co., Fitchburg, Mass. FRANK McSWEGAN & SONS, Dover St. and Franklin Square, N. Y.

For Sale.

One 16 in. x 32 in. "Fishkill" Horizontal Corliss Engine, practically new.
One 200 lb. "Bradley" Helve Hammer.
One 60 in. x 60 in. x 12 ft Planer.
One 6½ x 10 in. Double Cylinder, Double Drum "Crook" Hoisting Engine with boiler attached.

The above are second hand but in first class condition.

L. F. SEYFERT'S SONS,
437-441 N. 3d St., Philadelphia, Pa.

Second-hand Machinery,

IN FINE CONDITION.

60 in. New Haven Pulley Lathe with face plate jaws.
30 x 12 H. C. Fish Lathe, compound rest, taper attach. and chuck.
21 x 9 Lodge-Davis Lathe, comp'd rest, taper attach.
18 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
16 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
21 x 24 ft. Perkins Plain Rest and Chuck.
20 x 8 Putnam compound rest and chuck.
14 x 6 Prentice Elevating Rest and Chuck.
40 in. New Haven Drill, Back Geared, Power Feed.
84 in. Barnes " " " " " "
25 in. Prentice " " " " " "
30 x 30 x 8 ft. Pond Mch. Tool Co. Planer.
28 x 24 x 5 ft. New Haven Planer.
20 x 16 x 3 ft. " " "
17 in. Juengst Shaper.

S. M. YORK CO.,
Cleveland, Ohio.

FOR SALE.
SHAPERS.

16 in. to 32 in. stroke.

J. STEPTOE & CO.,
CINCINNATI, O.

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48 in. x 33 in. x 8 ft. Single Head Planer.
21 in. x 15 ft. Fitchburg Lathe.
1 1-16 in. Brown & Sharpe Wire Feed Screw Machine.
¾ in Spencer Coil Wire Automatic Screw Machine.
34 in. Gear Cutter, not automatic.
No. 2 Hilles & Jones Double End Punch and Shear, 16,000 lbs.
Send for complete list just out.

HENRY F. HILL,
123 Oliver Street, Boston, Mass.

SECOND-HAND MACHINERY.

1 Planer 60 in. x 60 in. x 14 ft. Screw feed, cheap.
1 Iron Planer 36 in. x 36 in. x 14 ft.
1 28 x 24 x 5 ft. Pond Planer.
1 Iron Planer, 22 x 22 x 5 ft., Hendey make.
1 Engine Lathe, Friction feed, 48 in. x 16 ft., cheap.
1 Engine Lathe, 42 in. x 14 ft.
1 Heavy Pit Lathe, 6 swing 10 ft.
1 52 in. Bickford Boring Mill A1.
1 50 lb. Upright Belden Hammer.
1 10,000 lb. Morgan Steam Hammer.
1 1000 lb. Steam Hammer.
1 2000 lb. Miles Steam Hammer.
1 400 lb. Morgan Steam Hammer.
1 250 lb. Morgan Steam Hammer.
1 48 in. Horizontal Boring Mill, Pond make.
1 Clayton Air Compressor, 16 in. x 16 in. x 14 in. stroke.
1 250 lb., 1 200 lb. Farrell Drop.
Machinery appraised any part of country.

NEW YORK MACHINERY DEPOT.
Office, 178 Broadway N. Y.

Equal to New.

No. 5 Mossberg & Granville Single Acting, Style B, Geared Press. Weight 4500 lbs.

A. B. Pitkin Machinery Co.,
PROVIDENCE, R. I.

I have 100 Horse Power Locomotive Boiler, good for 125 lbs. pressure, nearly new, extra large fire box; Round and Square Iron Tanks, all sizes; Boiler Shells for stacks and culverts; Pumps, Upright and Horizontal Boilers, Engines, Blow-off Tanks. All kinds of Scrap Iron and Metals bought.

ROBERT M. CUNLIFFE,
1140-42 Washington Ave., Philadelphia, Pa

FOR SALE CHEAP.

One second-hand Punching Machine. Capacity 1⅛ hole in 1 in. plate. Address
"PUNCHING,"
office of *The Iron Age*, 232-238 William St., N. Y.

MOVING.

Rather than move the following new and second-hand machines into our new shop, we will make SPECIAL PRICES on them. Write us!

LATHES.	12 in. x 5 ft. Bement. 12 in. x 6 ft. Silk. 16 in. x 7 ft. Harrington. 21⅛ in. x 11 ft. Thayer & Houghton 25 in. x 8 ft. Putnam, not s. c. 26 in. T. C. Lathe, 3⅛ in. hole in spindle. Tool front and back. 27 in. x 27 ft. L. & D., Taper.
SHAPER.	No. 2 Fitchburg, Traveling Head.
PLANERS.	24 in. x 24 in. x 6 ft. Whitcomb. 24 in. x 24 in. x 8 ft. Smith-Silk. 26 in. x 26 in. x 8 ft. Putnam.
DRILLS.	20 in. Wheel & Lever Drill. 20 in. Wheel & Lever, B. G. 24 in. B. G. P. F. A. S. 28 in. B. G. P. F. A. S. 32 in. B. G. P. F. A. S. 40 in. B. G. P. F. A. S. 1 Henley Swing Drill. 14 in. Aurora Sensitive. 16 in. Sensitive, Flickinger.
MISCELLANEOUS.	16 in. x 6 ft. Fox Monitor. 24 in. Pulley Lathe. 24 in. Turret Lathe, 4500 pound. 26 in. Pulley Lathe. Harrington Suspension Drill No. 1 for plate work. 1 Brass Valve Machine. Emery Stands for two wheels 1 in. x 2 in. Garvin Screw Slotter. Hand Forge, Foos Mfg. Co., Scientific No. 3. Sellers Twist Drill Grinder. Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS
IN
MACHINE TOOLS.
Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe.
22 in. x 12 ft. Flather Engine Lathe.
No. 0 Pratt & Whitney Screw Machine with wire feed.
1 Fitchburg 30 in. x 30 in. x 8 ft. Planer.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear.
Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
1 3-head Slotter for locomotive frames; bed 36 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,
136 Oliver St., Boston, Mass.
18 South Canal St., Chicago, Ill.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.

48 in. x 20 ft. Fifield.
36 in. x 18 ft. Fifield.
28 in. x 27 ft. Fifield.
27 in. x 10 ft. Davis & Egan
25 in. x 12 ft. S. C. Forsaith
24 in. x 20 ft. Fifield.
21 in. x 16 ft. S. C. Forsaith
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
16 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.

17 in. x 17 in. x 4 ft. Putnam Planer.

30 in. x 30 in. x 6 ft. Putnam Planer.
Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
14 in. x 5 ft. Turret Lathe.
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & K.
No. 4½ B. G. Garvin Miller
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
15 in. Davis & Egan Shaper.
26 " " " "
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
3 50 lb. Bradley Strap Hammers.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago.

Second-Hand Tools.

ENGINE LATHES
- 1 13 x 5 Plain Turret Lathe.
- 1 14 x 5 Putnam.
- 1 15 x 5 Pullard.
- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 10 Lodge & Barker.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 20 x 8 Lodge & Barker.
- 1 18 x 10 Sheppard.
- 1 18 x 10 Steptoe McFarlan.
- 1 19 x 7 Lodge & Davis.
- 1 20 x 8 Pond.
- 1 20 x 0 Porter.
- 1 24 x 12 Hatfield.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.
- 1 32 x 32 x 12 Fitchburg.

DRILLS.
- 1 18 in. Sensitive Drill.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 4 ft. Plain Radial Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 12 in. Smith & Mills.
- 1 15 in. Steptoe.
- 1 15 in. Betts Traveling Head.
- 1 26 in. Friction.

SCREW MACHS.
- 1 ¾ Screw Machine.
- 1 1¼ Screw Machine.
- 1 1½ Screw Machine.
- 1 2¼ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head.
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1¼ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton Keyseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ⅞, 1¼, 1¾ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in Hand Lathes.
1¼ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. CO.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.
Second-Hand Machinery.

1 54 in. x 22 ft. Pond Engine Lathe, triple back geared and raising blocks to make it swing 66 in.
1 30 in. x 23 ft. New Haven Engine Lathe.
1 24 in. x 16 ft. Fish Engine Lathe, blocks to make it swing 32 in.
1 56 in. x 30 ft. Double Head Column Lathe.
1 54 in. x 54 in. x 20 ft. Hercules Planer.
1 36 in. x 36 in. x 9 ft. Pond Planer, good as new.
1 24 in. x 24 in. x 6 ft. Whitcomb " " "
1 No. 4 Cincinnati Universal Miller.
1 No. 1 " " "
1 No. 2 " Plain "
1 No. 2 B. & S. Universal Grinder.

Also numerous other smaller tools, shafting, pulleys, hangers and belting, all in fine condition.

Write for complete list.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

ONE ALDRICH PLANER FOR SALE.

24 in. x 24 in. x 6 feet. In good running order. Price very low.

HURLBUT-ROGERS MCH. CO.,
So. Sudbury, Mass., U. S. A.

18 in. x 42 in. Corliss
Cheap Before Removal.

An 18 in. x 42 in Wetherill Corliss Engine with 14 ft. x 26 in. belt wheel, heavy jack shaft and pulley, 100 ft 24 in. heavy double leather belting. Wetherill feed water heater. Used only two years and in splendid order.

THOMAS P. CONARD,
119 So. Fourth St., Philadelphia Pa

FOR SALE.

2 Vertical Boilers, 400 H. P. each, steam 125 lbs.
1 " " 250 " " " 100 "
24 42 x 48 cross Compound Wright Engine.
22 40 x 36 " " " "
2 Tandem compound Wright Engine.
20 40 x 36 Corliss Engine.
1 Double tandem compound Wright Corliss Engine, 1000 H. P.
26 x 60 Corliss Engine.
250 H. P. compound Westinghouse Engine.

MARVIN BRIGGS,
12 B'way, N. Y. City.

FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & B. Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen't'g Set.

WICKES BROS., Saginaw, Mich.

Reade & Bowler

OFFER FOR SALE

Following lot of Machine Tools all used not over sixty days

1 8 ft. Betts Boring and Turning Mill, 2 heads.
1 3½ ft. Radial Drill.
1 32 in. Drill, Lodge & Davis.
1 28 in. " " "
1 30 x 30 x 8 Planer, Lodge & Davis.
1 20 in. Shaper Lodge & Davis.
1 38 x 14 Fifield Lathe, latest design.
1 88 x 16 " " "
1 24 x 16 " " "
1 17 x 8 Muller Lathe.
1 7 ft. Pit Lathe.
3 Doty Punches.
1 Davis Keyseater.
1 Blacksmith outfit.
2 Blowers.
1 Tool Room.
2 Cranes
We desire to sell this lot complete.

READE & BOWLER,
Office, 216-217 American Trust Bldg., Cleveland, O.
Warehouse, 20-44 Frankfort Street, Cleveland, O.

FOR SALE, CHEAP.

1 24 x 48 Corliss, with 18 ft. Band Wheel, 40 in face.
1 16 x 42 Corliss, with 7 ft. Band Wheel, 17 in. face, 12 ft Fly Wheel.
1 54 in. Bement Boring Mill.
1 42 in. Radial Drill.
1 12 in. Bement slotter.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.

4 14 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

S. T. LUND,
54 Oliver St., Boston, Mass.

FOR SALE.

(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS,
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.
13 in. x 6 ft. Ames.
14 in. x 6 ft Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines
No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 0 ft., 3 heads.

Shapers.
9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.
24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,
136-138 Liberty St., New York City.

Second hand Machinery.

MILLING MACHINES.
2 No. 2 Brown & Sharpe Plain Millers, '98 pattern.
3 No. 1 Cincinnati Plain Millers.
3 Prentiss Hand Millers.
2 Garvin Hand Millers.
4 Pratt & Whitney Lincoln Millers, '98 pattern.
Beaman & Smith Duplex Miller.
No. 5 Becker Vertical Miller with automatic feeds.
No. 3 Hilles & Jones Vertical Miller.
New Cincinnati Milling Machines for immediate delivery.

WIRE FEED SCREW MACHINES.
No. 3 Warner & Swasey, '98 pattern.
No. 6 " " "
Bardons and Oliver Hub Machine.
No. 3 Garvin, eight hole turret.
No. 2 Garvin.
3 No. 1 Pratt & Whitney.
8 x Jones & Lamson.
New Dreses-Mueller Screw Machines in stock.

DRILL PRESSES.
Six spindle Bickford Heavy Gang Drill.
No. 4 Four spindle Pratt & Whitney.
Three spindle Baker Bros. Gang Drill.
Prentice Bros. Suspension Drill.
New Sensitive Upright and Gang Drill in stock.

The above machinery is in most cases equal to new.

AGENTS FOR
Gould & Eberhardt Shapers and Gear Cutters.
Cincinnati Milling Machines.
Pond Planers.
Bickford Radial Drills.
Lodge & Shipley Lathes.
National Bolt Cutters.

Investigate our new Disc Grinder.

Marshall & Huschart Machinery Co.,
62 So. Canal St., Chicago, Ill.
19 So. Water St., Cleveland, O.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ¼, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $250 each. Numerous machines not mentioned for want of space.

C. R. BIGELOW, 45 Dey St., New York City

ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place,
Philadelphia, Pa.

Special Bargains in Second-hand Machinery.

60 in. Bement vertical boring mill.
48 in. Bickford vertical boring mill.
33 in. N. Y. Steam Eng. Co., car wheel borer.
Style "D" Newark horiz. boring machine, 4 in. bar 7 ft. table.
2 No. 4 Waterbury presses, 1¼ in. stroke.
No. 1 Stiles press.
50 lb. Bradley strap hammer.
125 lb. Forsaith trip hammer.
2 850 lb. Merrill, fric. board drop.
16 ft. Hilles & Jones plate planer.
66 x 60 x 16 Waterbury planer.
36 x 36 x 8 Betts Machine Co. planer, good as new.
2 in. Bement bolt cutter.
1½ in. Merriman automatic opening.
8 ft. Betts bending roll.
Set of hand bending rolls.
¼ in. style B Adt. riveting machine with c. shaft.
¼ in. Adt. wire straightening and cutting off machine.
16 in. Gould crank shaper.
15 in. Lodge & Davis crank shaper.
16 in. Betts traveling head, crank shaper.
14 in. Betts traveling head, crank shaper.
12 in. Betts traveling head, crank shaper.
4-spindle Colts gun stock profiler.
600 lb. Bement steam hammer.
5 x 6 Tubular barrow steam hammer.
No. 1 Brown & Sharpe univ. miller.
No. 3 Garvin plain miller.
No. 1½ Garvin plain miller.
3 Colts Lin. Pat. back geared.
3 Ames. Lin. Pat. back geared.
70 in. Pit Lathe.
30 and 33 in. Putnam pulley lathes.
40 in. Pulley lathe
8 No. 2 Higley cold sawing machines, in fine order.
Also large assorted stock of other tools on hand. Send for complete list. Write us for anything you need.

PRENTISS TOOL & SUPPLY CO.,
Buffalo Office, 603 D. S. Morgan Bldg.
New York Office, 115 Liberty Street.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE!!

SECOND-HAND

MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

HILL, CLARKE & CO.,
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IRON TANKS FOR SALE. All Sizes.

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WANTED

A Second-hand Axle Centering Machine; give lowest price, name of maker and condition. Address "M. H.," office of *The Iron Age*, Forrest Bldg., Philadelphia, Pa.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

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all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

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One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
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One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

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32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
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60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

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10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
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14-in. Ames wire feed screw machine.
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Two Pratt & Whitney 5-spindle nut tappers.
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It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

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Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

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SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine,	85 H. P.	$225
One 9x18 " " "	25 H. P.	125
One 65 H. P. Hor. Tubular Boiler,	complete,	225
One 50 " Vertical "	"	200
One 40 " " "	"	200
One 12" Double Rocking Scrap Shear,	- -	125
6", 5", 4", Section Steam Pumps, each	-	100

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WANTED.

SHEARS

Suitable to cut 4 in. Steel Billets cold.
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One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes.

31 x 108 in. Plate Mill, Roughing Rolls, 28 x 84 in., live tables.

1 110 in. Plate Shear.

Pair 36 x 40 in. Horizontal Reversing Engines.

1 18 in. Bar Mill.

2 10 in. 3-high Bar Mills.

Engines, Shears, Roll Lathes, 20 Boilers.

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One 10 ton Locomotive Crane.

One 2 ton Locomotive Crane. Both standard gauge.

Supply and Hydraulic Pumps.

Large lot of other machinery such as used in a large steel works.

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20 in. x 12 ft. " " L. W. Pond.
24 in. x 21 ft. " " New Haven.
54 in. x 11 ft. " "
84 in. Radial B. G. & S. F'd, Betts Mch. Co.
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No. 2 Wire Feed Screw Machine. Takes 1" Stock. Good as new. Costilo.
7 No. 18 Bliss Presses. Good order.
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Can give bargains in new and second-hand machine tools at all times.

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Rare opportunity for concerns equipping new plants or adding to present facilities to secure Shafting, Hangers, etc., Standard Small Tools in great variety, Special Bicycle Machinery and Tools, General line of equipment and Supplies used in bicycle factory. All in first-class condition. Send for catalogue. Something in the lot sure to be of interest. Owners retiring from business. Address

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Executors' Peremptory Sale

of Blast Furnace, Rolling Mills and Wrought Iron Tube Works belonging to Estate of James Hooven, deceased. Will be sold at Norristown, Pa., on Wednesday, Feb. 8, 1899, at 2 P. M. For further particulars address

JOHN W. SCHALL,
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FOR SALE CHEAP.

Blowing engine suitable for blast furnace. Size of steam cylinder 24 x 36; size of blowing tub 73 in. Built by well known maker; in use but 12 months. Guarantee condition almost equal to new. Will sell at a low price if sold at once. Address "ENGINE," office of *The Iron Age*, 232 William Street, N. Y. City.

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Hardware Specialties,

IRON OR BRASS.

Light Machinery,

TO MANUFACTURE.

Good Shop, Good Tools,
Good Workmen.

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One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

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One heavy Screw Cutting back and faced geared Lathe, 52 in. swing, 22 ft. bed, with cross and straight feed.
One Planer, 33 in. x 12 ft. table.
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An old established Hardware Business, the best stand in New England. For particulars inquire of

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For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

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Dealer in second-hand Tack and Nail Machinery.

IMPORTANT.

First-class new manufacturing property to let. Most substantial brick buildings, high ceilings, many windows, Engine, Boiler, line shafting, steam heat, draughting room, three offices, large lot. Four trunk lines railroad. Daily boats. 1½ hours from this city by railroad. Suitable for any business. Will alter to suit tenants. Strikes unknown. Have plan of property. Address

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FOR SALE.

Complete plant for manufacturing Conductor Pipe, Eave Trough and Metal Roofing. Location unsurpassed. Good will of long established business. Address

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I Offer For Sale

a well equipped foundry and machine shop at Poughkeepsie, New York, together with the lease, and will be pleased to hear from any one desirous of purchasing such a plant.

CHAS. F. COSSUM,
35 Market St., Poughkeepsie, N. Y.

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 30, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

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Boilers: 50, 100, 250, 375 and 500 H. P.

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Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

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We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

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Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

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We Have For Sale

2 150 h. p. Babcock Wilcox Boilers, with first joint connections.
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ALL IN FIRST CLASS CONDITION.

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ENGINE.

Vertical, 16 in. x 18 in. cylinder, in first-class order, complete. Price, $375 00.

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Shell, 56 in dia., 34 Tubes, 5 in. x 15½ ft. Price, $150.00.

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JAMES LEFFEL & CO.,
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Jan. 6, 1899.

Two Electric Lighting Companies in the City of Beloit, Wis., having been consolidated and converted into a Water Power Plant, the following list of machinery has been thrown out of use and is for sale. None of it is over four years old, some of it used but little and the best of it, such as the engines are as good as new. It will be disposed of cheaply to quick buyers for cash. Inspection and correspondence solicited:

1 60 H. P. Hor. Engine, 8 in. x 14 in. cylinder. Manufactured by John T. Nove Mfg. Co., Buffalo
1 175 H. P. Ten Corliss 16 in. x 42 in. cylinder.
1 220 H. P. Williams Engine, 14½ in. x 30 in. cylinder.
1 160 H. P. Corliss Engine, 14 in. x 32 in. Manufactured by Hoffman & Billings Mfg. Co.
1 Brownell full front Boiler, 58 in. x 14 ft., pattern No. 70.
1 Root full front Boiler, 70 H. P.
1 Excelsior Iron Works Boiler, 5 ft. 3 in. x 12 ft., full front.
1 Taplin Rice & Co. Boiler, 5 ft. 6 in. x 15 ft., full front, Pumps, Injectors, Governors Shafting, Floor Stand, Pulleys, Belt Tighteners, Belting, etc., etc. Apply to the

BELOIT ELECTRIC CO.,
BELOIT, WISCONSIN.

BEMENT BORING MILL.

1 54 in. Bement Boring and Turning Mill.
1 12 in. Bement Slotter.
1 5 ft. Full Universal Radial Drill.
1 Gisholt Tool Grinder.
1 12 in. Turret Lathe.
1 16 in. x 8 ft. Ames Lathe.
1 Heavy Grinder.

All good as new.

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Supported by the State of Michigan. Practical work Elective system. Special advantages for men of age and experience. For catalogues address

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We have for sale at prices far below cost and real value—

Safe Works,
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All kinds of machinery, new and second-hand, at very reasonable prices.

Locations for Industries.

The Chicago, Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
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FOR SALE.

About 1,500,000 lbs. Steel Plates,
from ¼ in. to 1½ in. 4 ft. x 22 ft. Very best material, low phosphorous.

500,000 lbs Iron Tank Plates
⅜ in thick. 2 ft. 6 in. x 7 ft.

About 120,000 lbs Steel Bars
4 in. to 8 in. x ¼ in.

Large lot Angles and Channels, 3 Stacks, 40 ft x 36 in. x 3-8 in.

The above material is all new, coated with one coating of paint, and was in use in the lately demolished Gas Holder of the Consolidated Gas Co., 21st Street and Ave. A, New York, where it may be inspected.

Also 1 50-ton hoist,
with Engine and Blocks complete. Correspondence solicited.

H. A. HITNER'S SONS,
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FOR SALE OR LEASE.

Manufacturing Plant, Bank Street, Cincinnati. Specially constructed of brick. 150 ft. x 100 ft. Four stories High ceilings. Light on all sides. Boiler, Murphy Furnace, Engine, Shafting, Heating. All complete.

Apply to

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An Iron Merchant with large established business in the North of England, and having a practical knowledge of the trade, wishes to represent American Manufacturers of Pig Iron and Rolled Steel of all kinds in Great Britain. Address first letter to "30/63," care *Ironmonger*, 42 Cannon St., London, England.

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At great sacrifice by order of Court to satisfy a mortgage, about 9,000 acres of land rich in *Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power*. Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c to J. Stewart Walker, Court's Agt., Lynchburg, Va.

..CHEAP..

1 Kendall & Roberts 3 drum Hoisting Engine, cylinders 7¼ x 12 in.
1 35 H.-P. Team Engine.
1 30 H.-P. Boiler.
1 Large Quarry Derrick, complete.
1 " Blondin, complete.
1 " Cemetery Derrick, with gears.
1 " Oak Windlass.
1 Frame and Gears for large hand derrick.
1 Fairbanks Floor Scales, 3,500 lbs. capacity.
" Portable Scales, 1,700 lbs. capacity.
All in good condition.

CRAIG & RICHARDS GRANITE CO.,
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FOR SALE—LUDINGTON IRON WORKS.
Late GEO. GOODSELL, Proprietor.

The entire plant consisting of four lathes, one shaper, one slotter, two drill presses, one planer, steam hammer, pipe cutter, stamping machine, engine and boiler, and all other machinery not enumerated shafting, bar iron and castings, gas pipe, iron and brass goods. Also a carload of patterns of all descriptions useful in this line. Prefer to sell all the machinery outright. We desire an offer within thirty days from parties wishing to investigate. Address,
LUDINGTON IRON WORKS, Ludington, Mich.

FOR SALE.

One 10 H. P. 110 Volts ELECTRIC DOCK HOIST, Motor Hoisting Drum, etc., all on one bed.

One 25 Arc Light Dynamo.

Both above machines are Thomson-Houston make and practically as good as new.

JAMES STEWART & CO.,
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For a short time I will offer for sale a one-half interest, or the complete stock of a well selected line of general hardware of every description, including stoves, furnaces, tinware, steam, water and gas supplies, together with tin shop and plumbers' tools, etc. This is a very modern hardware store, clean, with absolutely no dead stock. The largest of three hardware stores in a county seat of 5,000 inhabitants, and doing a good business. Will invoice about $5000. Must dissolve partnership. Address
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Office of *The Iron Age*, New York.

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One second-hand Compound Condensing Upright 40 horse-power Engine in good repair. Engine was made by Wm. Coutier & Sons of Troy, N. Y. Please write for prices to
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The owner of a small iron manufacturing establishment wants additional capital and to extend the business and organize it as a corporation. Address
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Large stock always on hand.
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SCRATCH CLOTH
for cleaning files and other tools.
WIRE CABLE
in job lots, at very low prices.
WALSH'S SONS & CO.
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New Jersey Iron & Metal Co.,
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Write us when you have scrap to dispose of or want to buy.

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bought and sold by
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10th Ave. and 15th Street,
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Telephone Call, 897 18th St

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OLD METALS
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SCRAP IRON and STEEL
In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 55 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
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300 tons 60 lb. first class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.
BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill

FOR SALE.
STEEL RE-LAYING RAILS.
5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.
THE ISAAC J. JOSEPH IRON CO.,
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SCRAP IRON and STEEL.
Correspondence Solicited.
Robert Grant & Co.
253 BROADWAY, N. Y.

SCRAP IRON WANTED.
We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.
THE JANSON IRON COMPANY,
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Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

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WANTED.
Scrap Iron and Steel.
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SHELBY & CO.,

Engineers' and Hardware Merchants,
Finsbury Circus Buildings, London, Eng., will be pleased to open correspondence with makers of Specialties for Sole Representation in Great Britain.

FOR SALE.

We offer for sale the following plants, with all real estate, buildings, machinery, fixtures and tools complete, or we will dismantle same to suit buyers.

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These plants contain over 7,000 tons of machinery and equipment of every description.

C. R. BAIRD & CO.
Pig Iron,
Philadelphia, Pa.

For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address
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Established jobbing and retail hardware business in good business town of Northern Ohio. Best of reasons for selling. A fine opportunity for some one. Address
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Rare Opportunity.

Owing to the continued ill health of the partner in charge, we offer our well selected stock of hardware, stoves, implements, plumbers' and tinners' stock for sale. Twenty six years in one location. Modern store rooms, ample warehouse facilities. Buildings will be sold or rented to suit purchaser. Situated in a rich agricultural section on line of Lehigh Valley R. R. Address
SMITH & STRONG,
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FLY WHEELS.
One 11 foot, in halves. 10 tons weight. One 8½ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.
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Passaic Ave. & New, Harrison, N. J.

For Quick Delivery.

1 Single Punch, 7 in. throat. No. 6, new.
1 Double Punch, 12 in. throats, No. 3. used.
1 Single Punch, 12 in. throat, No. 5, used.
1 Roll for straightening light plates, used.
1 Roll for leveling sheets, new.
3 Hackney Hammers.

WAIS & ROOS P., S. & ROLL CO.,
Cincinnati, Ohio.

Being about to locate in Nicaragua, I respectfully solicit correspondence with the manufacturers of goods applicable to that section.

F. E. MELLINGER.
Bluefields, Nicaraugua, C. A., formerly Supt. Computing Scale Co., Dayton, Ohio.

FACTORY and LOTS FOR SALE.

Offered for sale, a brick factory in New York City, suitable for light or heavy manufacturing purposes, with vacant lots adjoining; about 30,000 feet of floor space, light on all sides, and heated by steam. The property is increasing in value. For terms and particulars address "OWNER," 169 Macon St., Brooklyn, N. Y.

WANTED.

Second-hand geared Punch Presses in good order, weighing from 2000 to 4000 lbs.

HOLLINGSHEAD, WIRTZ & GRAUERT CO.,
Lincoln, New Jersey.

WANTED

No. 4 Root's Pressure Blower; must be in A1 condition and at a reasonable price. Address

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Merck & Son, 85 Gracechurch St., E. C., London, England, desire to represent some American Mfrs. of Hardware and Stationery Specialties. Al references.

Address direct, or care of A. M. Co., 13 Gold St., New York.

WANTED.

Brooklyn Wire Nail Machines in good repair. Address, giving size and full particulars,

"P. O. BOX, 33,"
New York.

WANTED.

A good second-hand Corliss Engine, either vertical or horizontal; cylinder about 36 to 42 in. by 48 to 60, with heavy fly wheel. Address

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Office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

FOR SALE.

At a reasonable price, stock and fixtures of a first class Hardware Store, established twenty-five years, located in New Jersey. Amount of stock, about $8000. Good store, cheap rent and best location. Will stand investigation. Owner wishes to retire. Address

"STARS,"
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GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

Address, "M. M. N.,"
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HARDWARE STORE FOR SALE

The stock of hardware and other goods of the Clark Hardware Co., Springfield, Mass., also the fixtures and lease of said store, with the good will of the business. This is a rare opportunity for buying an established, paying business. Sale is imperative and is made to settle the estate of the late Edward H. Phelps. For particulars address

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FOR SALE.

First-class File Works for sale at a bargain. Terms easy. Reasons for selling owner not practical and has other business. Address "FILE WORKS," office of *The Iron Age*, New York.

BROWNE & MANSFIELD,

245 Broadway, N. Y., Manufacturers' Agents, wish correspondence from firms who are not represented in New York, and who desire business here. We have a plan that is giving satisfaction and will increase your business.

To Manufacturers of Hardware, Building Materials and Specialties.

An enterprising firm in South Africa, purchasing for cash through commission house, is open for a sole agency arrangement for articles in above lines. Address

"AFRICA,"
office of *The Iron Age*, 232-238 William St., N. Y.

Manufacturers

desirous of increasing their export trade can secure the services of a party having had many years' experience selling goods to foreign countries. Terms reasonable.

Address ROOM 907,
66 Beaver St., New York City.

FOR SALE.

Hydraulic Elevator, with electric motor, pump and water tank, complete. Can be bought cheap on liberal terms. Apply

LEOPOLD ADLER, Savannah, Ga.

Iron Capitalists Attention!

Wanted, an ironman with from $25,000 to $30,000 to invest in a specialty giving absolute control of one of the most extensive iron and steel products. Address

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FOR SALE.

The best Hardware opening in Eastern Illinois. Stock about $4000. Address

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WANTED.

Jobs and Specials for SPOT. Send particulars.

BROWNE & MANSFIELD,
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AMERICAN RAILWAY SUPPLY COMPANY,

Manufacturers of

Baggage, Hotel and Time Checks, Metal Figures and Letters and everything in the line of Stamped Metal Work.

24 PARK PLACE, NEW YORK.

FOR SALE.

One No. 50 Crosby Power Press (new) with bolster, inclined legs, patent knock out and automatic brake. JAMES HILL MFG. CO., Providence, R. I.

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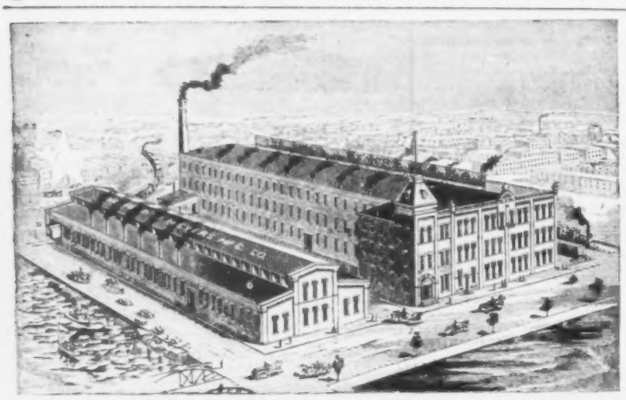

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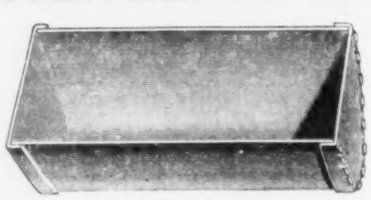

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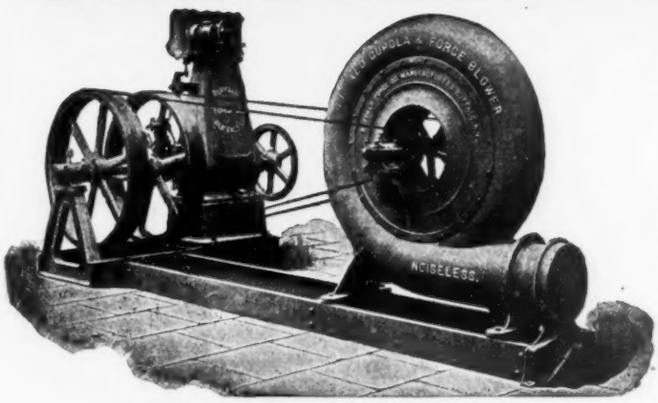

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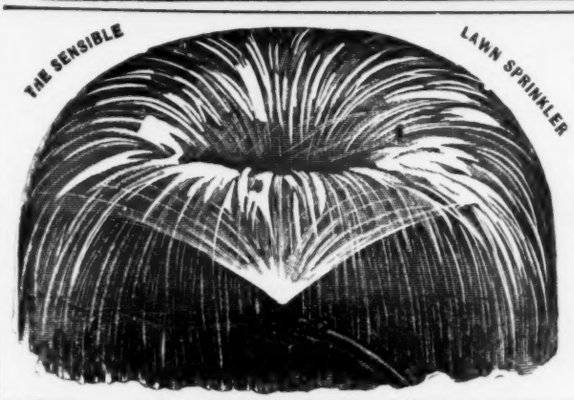

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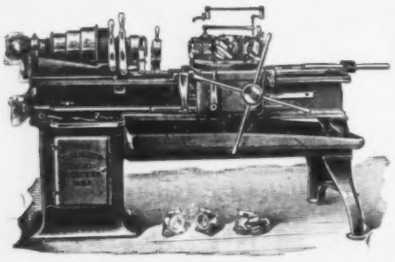

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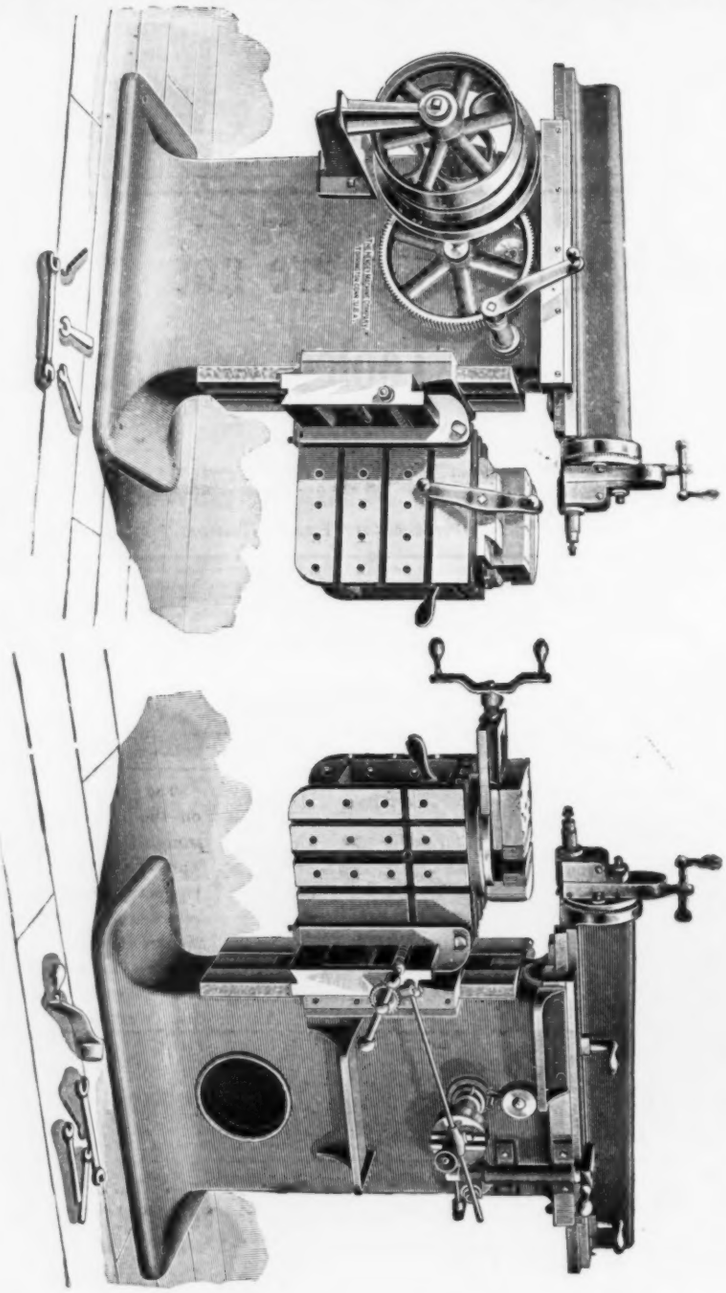

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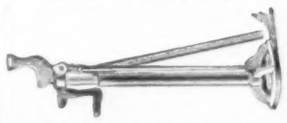
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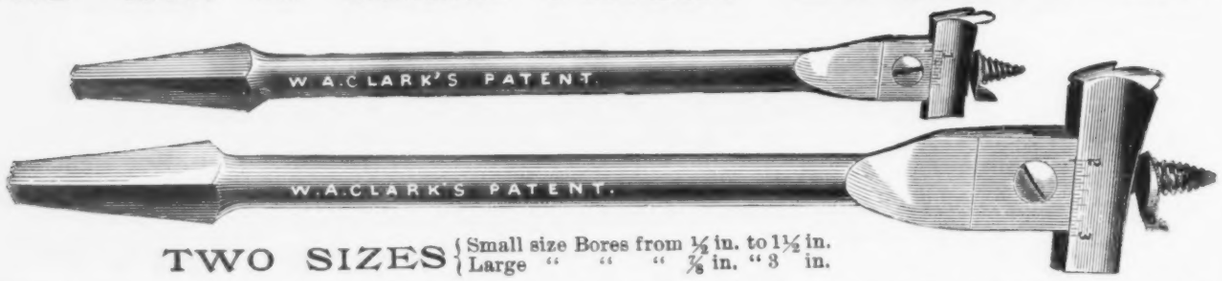

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MILLERS FALLS CO.,

93 READE STREET,
NEW YORK.

Jan. 1st, 1899.

Palmer's Common Sense Frame Pulley.

MANUFACTURED BY
PALMER HARDWARE MFG CO.
TROY, N. Y.

Headquarters for **"SALEM" Elevator Buckets.**
And Every Kind of Elevator Bolts.

W. J. Clark Co.,
SALEM, OHIO.

The Donoghue Soldering Copper Handle is a good Handle. **TESTED TEN YEARS.**
Made by The Cleveland Rule & Handle Co.,
CLEVELAND, O.

OUR
ART HARDWARE
AND
"VASSAR" CYLINDER LOCKS
are specified by Architects on First Class Work. Many handsome New Designs in Fine Bronze. All the popular finishes.
READING HARDWARE COMPANY,
New York, 96 and 98 Reade Street. Philadelphia, 617 Market Street. Chicago, 105 Lake Street.
Factories, READING, PA.

STORE and WAREHOUSE BROOM.
(Round Steel Wire.)
This is the only Broom which will clean or scrub a floor without the use of water For use in Machine Shops, Factories, Warehouses, Stores and all business places.
The ideal Broom for hard wood floors.

It cleans without defacing.
Write for Catalogue and Prices.
Manufacturers of Wire Brushes of Every Description.
THE HENDEE WIRE BRUSH COMPANY, 342-346 Broadway, Milwaukee, Wis.

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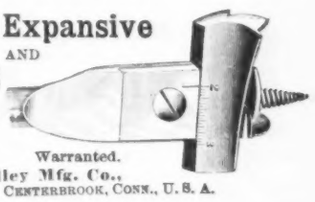
EGYPTIAN LACQUER MFG CO.
Lacquers
FOR METAL GOODS.
152 FRONT ST NEW YORK CITY.

Clark Expansive AND WRIGHT'S Jennings BITS.

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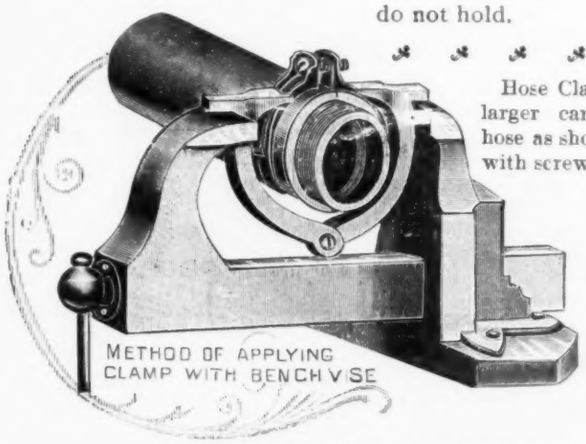
Conn. Valley Mfg. Co.,
CENTERBROOK, CONN., U. S. A.

A CURE FOR LEAKY HOSE
is for the dealer to order all hose coupled with *SHERMAN CLAMPS,* as that will remedy many leaks that come from wire bands hat stretch or cast clamps that break and do not hold.


Hose Clamps 1 in. and larger can be put on hose as shown in cut, or with screw driver alone.
Small sizes ½ and ¾ in. for lawn hose are applied to hose with screw driver alone.
SOLD BY ALL JOBBERS.
Manufactured by H. B. SHERMAN MFG. CO., Battle Creek, Mich.

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HALF-TONE PHOTO-ZINC ETCHING and WOOD ENGRAVING
ALL DONE ON THE PREMISES
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THE ORATOR and IMPROVED HUNNINGS
solid back dust transmitters in Wall, Desk and Cabinet Styles.
They are **Convenient, Durable** and the **best** of **talkers.**
A trial will convince anyone of their superiority on either **short** or **long** distance work.
Anyone can make an instrument that will work well at first, but to produce one that will **continue** to meet every proper demand is quite another problem.
The Orator will.
Manufactured by
THE RAWSON ELECTRIC CO.
ELYRIA, O., U. S. A.

NEW ENGLAND SPECIALTY CO.,
NORTH EASTON, MASS.
Screwdrivers, Can Openers, &c. Sheet Metal Punching and Nickel-Plating. Mill Supplies, Steel Springs of all kinds.

Note the figures--they tell the tale.

Segment Ground Saws.

14 Gauge on Tooth Edge. 16 Gauge on Ends on Back Edge. 19 Gauge at Center on Back Edge.

Ground on a **segment of a circle, the only true and practical method of grinding saws whereby a substantially uniform gauge can be given to the toothed edge and a true segment taper imparted to the blade, from tooth edge to back edge of the blade.** Will do 25 per cent. more work without filing than other saws.

WRITE FOR PRICES **E. C. ATKINS & CO., Indianapolis, Ind.**

PLEASE YOUR TRADE.

Established 1832.

IT'S A WINNER.

Don't try to give them any other saw when they ask for a Simonds Cross-Cut (Crescent Ground). It will react against you. If they want a "Simonds" they will get it—of you, if you're wise; of some one else, if you're—otherwise.

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FITCHBURG, MASS.
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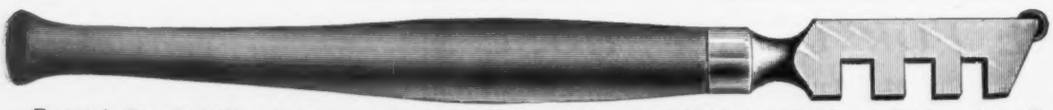
SIMONDS MFG. CO., Ltd.,
215 Magazine St., NEW ORLEANS, LA.
SIMONDS SAW CO.,
SAN FRANCISCO, CAL.



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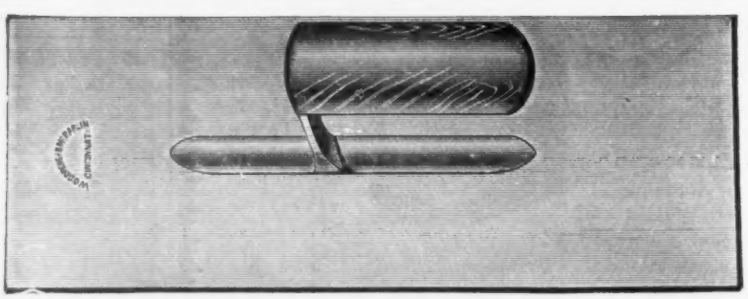
Barrett's Practical Glass Cutters are the standard the world over. Sold by more Hardware Dealers than all other makes combined. Send for prices and sample. W. L. BARRETT, Manufacturer, Bristol, Conn., U. S. A.

"There Are Others,"

But not the Genuine, ALL Imitations.



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THE NATIONAL SAW CO.,

GENERAL OFFICE:
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INCORPORATED.

PHILADELPHIA, PENNA.

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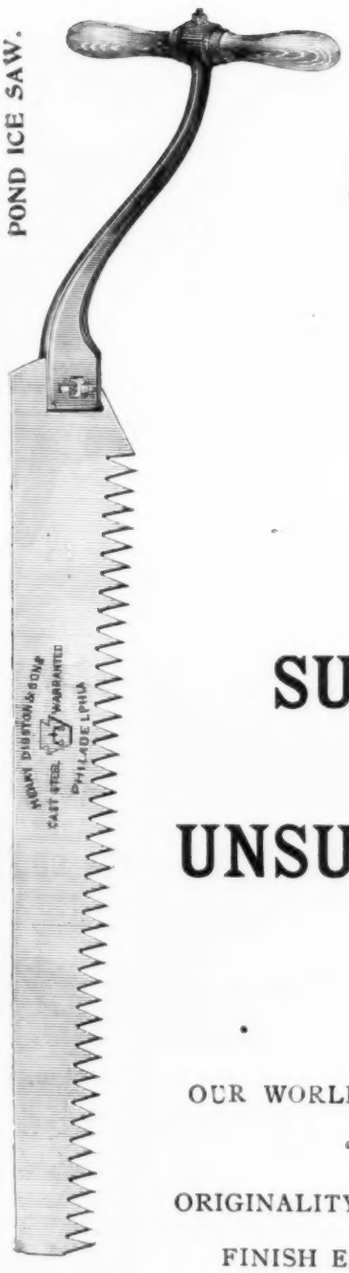

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UNSURPASSED WORKMANSHIP.

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ORIGINALITY OF DESIGN AND SUPERIORITY OF QUALITY AND FINISH ENTITLE THEM TO HIGHEST COMMENDATION."

Others claim a Special Award, but we possess it.

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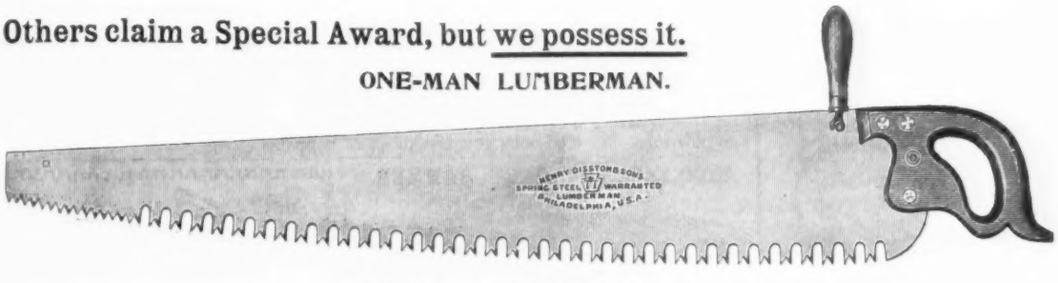

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SELLERS AND STICKERS.

A bicycle manufacturer may and may not have a line that goes with a hardware dealer, a jobber picks from the whole lot the goods that he offers with the wants of the hardware dealer in view. From the many good agencies established and from the very many testimonials we have we must feel that we have been successful in our selections.

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NO MACHINE GRINDING OR DROP FORGED BLADES
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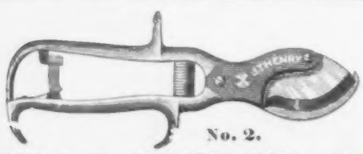

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WIRE FLY KILLER.

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Key-Hole Saw Handle
IS THE

NEVER SLIP
W. C. LADD, Maker, Bristol Conn.
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SEE DESCRIPTION ON PAGE 19 OF OUR CATALOGUE, SENT FREE.

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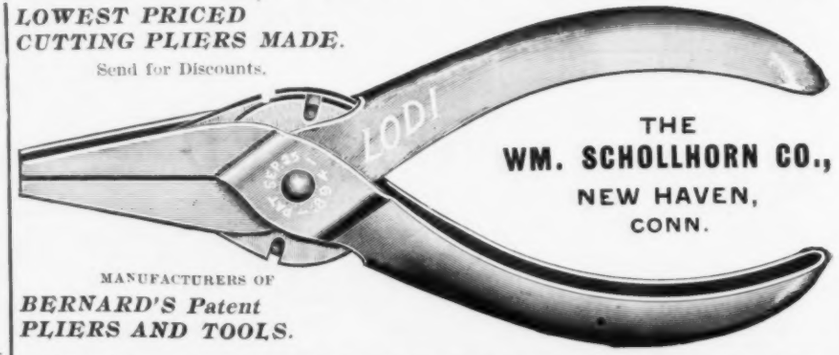
Send for Discounts.



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Fitted with long handles. A specialty for bill-posters and traveling advertisers; also useful in other trades
Superior to any magnetic tool heretofore made.
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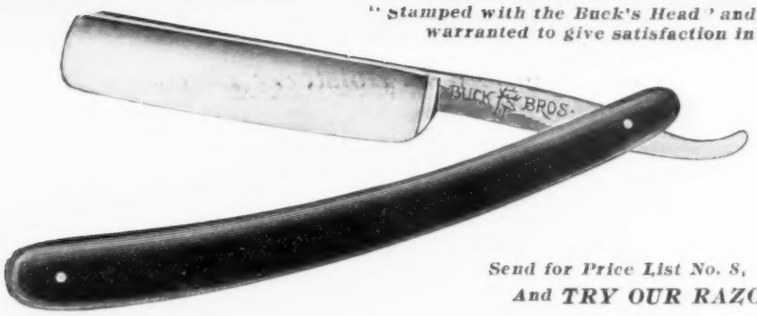
Slate Hooks.

One Hook to Each Slate.
Manufactured by
Moseley & Stoddard Mfg. Co.,
Rutland, Vt. *Send for Circular.*

"Stamped with the Buck's Head" and warranted to give satisfaction in use.



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BUCK BROTHERS, - Riverlin Works, - MILLBURY, MASS.

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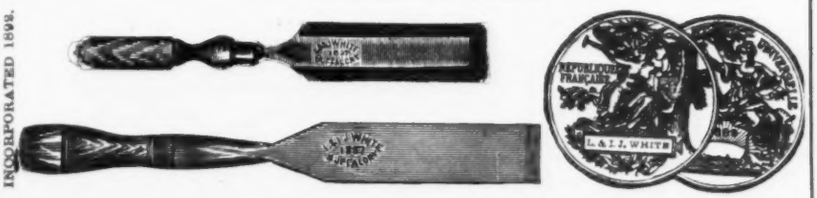
ESTABLISHED 1837 INCORPORATED 1898.



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BUFFALO, N. Y. Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.

ESTABLISHED 1825. ESTABLISHED 1825.

IMPORTANT DECISION RELATING TO THE

HEINISCH

TRADE-NAME ON SHEARS, TRIMMERS, &C.

The U. S. Circuit Court, Southern District of New York, Judge Townsend, has rendered a decision in the suit of "R. Heinisch's Sons Co. vs. Hermann Boker & Co."

"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

R. HEINISCH'S SONS CO.,
N. Y. OFFICE, 90 Chambers St. NEWARK, N. J.
NOT CONNECTED WITH ANY SHEAR COMBINATION.

Charles Buck, Millbury, Mass., U. S. A.

MILLBURY EDGE TOOL WORKS.

I MAKE A SPECIALTY OF CARVING TOOLS.

CHISELS,
GOUGES,
CUT and DOUBLE IRONS,
SCREW DRIVER BITS,
REAMERS,
CUPPED NAIL SETS, ETC.

Also a Full Line of **RAZORS,**
Hand Forged, Hand Ground, made of Best English Steel, branded *CHARLES BUCK.* All Goods Fully Warranted.

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CATTARAUGUS CONE BEARING SHEAR.

Here is where the *bearing comes* on this *perfect cone.*

Read description in "IRON AGE" of Oct. 20, page 45.

Write for Prices.

CATTARAUGUS CUTLERY CO. - Little Valley, N. Y.

THE CELEBRATED

RED SEAL SHEARS.

MANUFACTURED ONLY BY

THE ACME SHEAR CO.,

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Eureka Combination Plyer.

THE BRIDGEPORT MFG. CO., of Bridgeport, Conn., have recently added to their department, which is now fully equipped with the latest and most improved machinery for the manufacturing of anything that can be made from sheet steel or brass. They will be pleased to receive inquiries and make quotations on anything in this line.

Jumbo Nail Puller.

The "ORIGINAL JENNINGS" AUGERS and AUGER BITS.

Genuine have "Russell Jennings" stamped in full on the Round of each Bit.

FOR SALE BY ALL HARDWARE JOBBERS.
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American Tool Chest Company,
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MANUFACTURERS OF
TOOL CHESTS
Of all sizes, complete with tools, for Hardware, Toy Notion and Variety trades.
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Also Machinists' Tool Chests, empty. Tool Cabinets and Work Benches. Illustrated Catalogue and prices furnished on application.

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Cutlers to the American Butchers.

HAVE YOU SEEN THE

"QUAD" QUINT" For boring Auger Mortise for Sash Pulleys?

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EMPIRE FORGE CO., Lansingburgh, N. Y.

BIG SELLERS!

ROOT'S COBBLERS' OUTFITS
are needed in every family.
WRITE FOR PRICES
on *our full line*, also on Iron Lasts and Stands, Lap Lasts, Shoehammers, Shoe-findings and "Plymouth Rock" Half-soles.

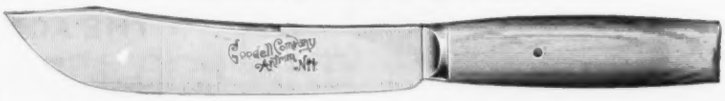
The Root Bros. Co., Plymouth, Ohio.

LEADERS.

You Can't Make Good knives any more than good bread without the right material, and even if you have the right material you can't make good knives if you don't know how to manipulate that material.

Solid Cocobolo Swell Handle with Bolster.

WARRANTED NOT TO GET LOOSE.



No. 146, 5, 5½, 6, 6½, 7 and 8 inch.

Five Rivet, Scaletang Beech Handle.

NOT SO MUCH TO LOOK AT, BUT A CUTTER.

No. 446, 5, 5½, 6, 6½, 7, 8, 9, 10, 11, 12, 13 and 14 inch.

The Steel That Goes into Goodell Butcher Knives is made for Goodell Butcher Knives and is found in no others. It is the same we have used for years. A quarter century experience has taught us how to manipulate that steel to produce the best results.

It costs more to make a good knife than a poor one, but not so much more as you might think (if you know how).

WE WARRANT OURS.

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The '98 Chicago Clipper Retails For $8.75.

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If you want a clipper "with a reputation" insist on the "Stewart Patent." There is no other "just as good" and they will cost you no more than the inferior kind.

We have just been awarded Gold Medal at Trans-Mississippi Exposition, highest and only award for horse clipping, sheep shearing and cattle grooming machines.

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HAMMACHER, DELIUS & CO., Hamburg, Germany,
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THE LEVIN PRUNER.

LIGHT, STRONG, DURABLE.

Makes a clear cut, does not mash the twig.

The easiest cutting pruner made.
All parts interchangeable.

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Endorsed by Gardeners, Nurserymen and Ladies.

No. 23 cuts ⅛ inch dry oak. Weight, 7½ ozs. each.

No. 24 cuts ¾ inch dry oak. Weight, 13 ozs. each.

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HIGH GRADE
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SHIP CAR BITS,
SHIP AUGERS,
SHIP BITS,
SINGLE TWIST BITS,

CARPENTERS' TOOLS

WARRANTED
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RAFTING AUGERS,
MILL AUGERS,
NUT AUGERS,
MACHINE AUGERS.

Jennings Pat. Auger Bits, Bell Hangers' Bits and Gimlets, Ring Augers, Hardled Gimlets, Screw Drivers, four complete lines; Nail Sets, Ice Picks, Angle and Upright Boring Machines, Cold Chisels, Countersinks, Reamers, Tinners' Punches, Screw Driver Bits, German Bits, Double Cut Bits, Tapping Bits, Etc., Etc

Manufactured by **SNELL MFG. COMPANY, Fiskdale, Mass., U. S. A.**

"Old reliable" double action

RATCHET SCREW DRIVER

Combines greater strength, convenience and durability than can be obtained in any common driver.

Gives perfect satisfaction and sells readily.

Send for price list.

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ROGERS BRAND SILVER PLATED WARE

BUT in all the wide, wide world with its remarkable achievements in the manufacturing line, there is as yet no make of **Silver Plated Ware** that can rightly lay claim to having reached the height of perfection attained in ***Rogers Anchor Brand.***

FACTORIES:
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MADE ONLY BY
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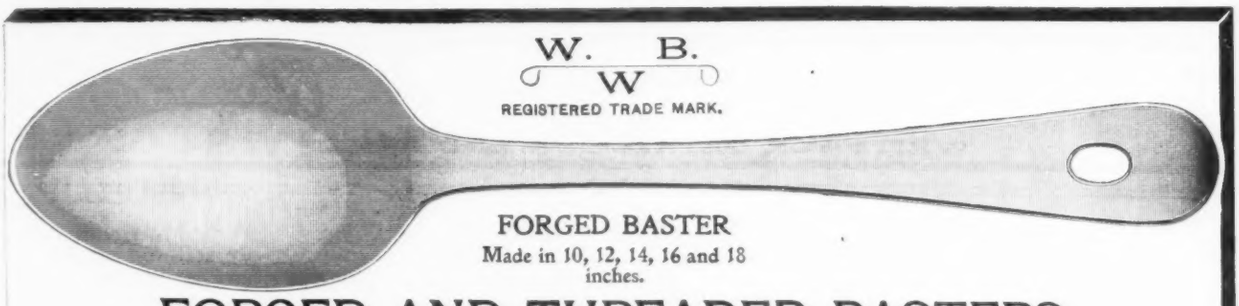

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Made in 10, 12, 14, 16 and 18 inches.

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McIntyre's

Dry Battery Portable Electric Safety Lamp...

This is an Electric Lamp set in a White Enamel Parabolic Reflector, and can be attached to the cap or any part of the clothing by means of a stick pin attached to reflector and connected to the battery with a flexible cord. The battery is arranged to be carried on a belt or in the pocket. So the user has free use of hands. The current can be turned off when not in use. Dry batteries are used and can be recharged fr m direct Incandescent Electric Current Charger and full directions go with each Lamp.

IS USED BY THE FOLLOWING: For Watchmen, Miners, Mine and Gas Inspectors, Boiler Shops, Oil and Gas Works and Gas Fitters, City Sewer and Underground Cable Inspectors; Powder Mills and Warehouses where explosive materials are manufactured and stored; exploring cellars and trenches where leaks occur, and investigating pipe connections where it is impossible to carry an oil lamp or candle for fear of explosion—and all parties requiring a safe portable light. The whole outfit is neat and compact.

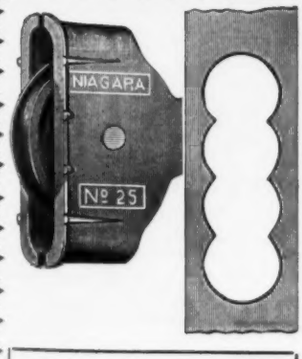
No. 1 weighs 2 lbs., 1½ C. P. Price complete, $4.00. For Meter Reading Only.

No. 2 weighs 3 lbs., 4 C. P. Price complete, $6.00. For General Use.

No. 3 weighs 12 lbs., 10 C. P. Price complete, $12.00. For Several Persons to Work By.

Manufactured by...

ELMER E. McINTYRE, Pittsburg, Pa., U. S. A.



We are makers of many of the goods formerly made by the Shepard Hdw. Co., whose interest in the lines we acquired by purchase.

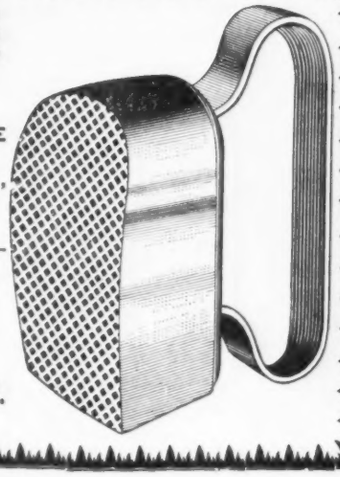
FOR EXPORT and DOMESTIC TRADE

WE MAKE
BLIND FASTENINGS, BLIND HINGES,
In a Variety of Styles.
SHUTTER HINGES, SHELF BRACKETS, GATE HINGES and LATCHES
In Several Styles.
"NIAGARA," "STAR," "ACME," and "GEM" FRAME PULLEYS.
POLISHING IRONS.
CASTERS, WELL WHEELS, HAYFORK PULLEYS, HATCHETS, HAMMERS, HOOKS, THUMB LATCHES, SASH LIFTS, DRAWER PULLS, CHEST HANDLES, FLORAL TOOLS, IRON PENNY TOYS,
&c., &c., &c.

☞ *SEND FOR CATALOGUE.*

Wrightsville Hardware Co., Wrightsville, Pa., U. S. A.

New York Agents, ALDER & BOYD, 37 Warren St.



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TROY, N. Y.
MANUFACTURERS OF
HARDWARE AND HOUSEHOLD SPECIALTIES

Don't you want some goods in our line.

WRITE FOR CATALOGUE AND PRICES

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MR. HARDWARE MERCHANT:
You probably sell too poor half-soles; you'd probably make more money on better. Whatever you like, we've got it.

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SCALES OF ALL KINDS.

HARDWARE SHELVING.

Expert designers hardware shelving and correct arrangement of stock.

Manufacturers of Warren's Patent Hardware Sectional Shelving, Drawers, Screw and Bolt Cases, etc.
Shipped to all parts of the world.

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DESIGN
"MARQUISE."

One of our latest and best patterns, much admired by the trade.

Made in Bronze or Brass, Old Copper, Antique or any finish desired.

Norwalk Lock Co.,
South Norwalk, Conn.

CHEAPEST
IN THE WORLD.
Made like high-priced ones and as perfect. Smooth and well nickled.

CUT FULL SIZE.

Send for Sample.

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WM. SOMERVILLE'S SONS, 3 Coopers Row, Liverpool, England, Sole Agents for Europe and the British Colonies.

PROOF TESTED COIL CHAIN.

JOHN C. SCHMIDT & CO., York, Pa. Manufacturers of Coil and Log Chains, Traces and Cattle Ties.
WRITE FOR PRICES.

NOW READY.

A TRIUMPH IN TRADE BOOKS.

OUR 1899

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A BOOK OF NEARLY 1,000 PAGES.

THE ANNUAL ENCYCLOPEDIA

OF THE

JEWELRY WORLD.

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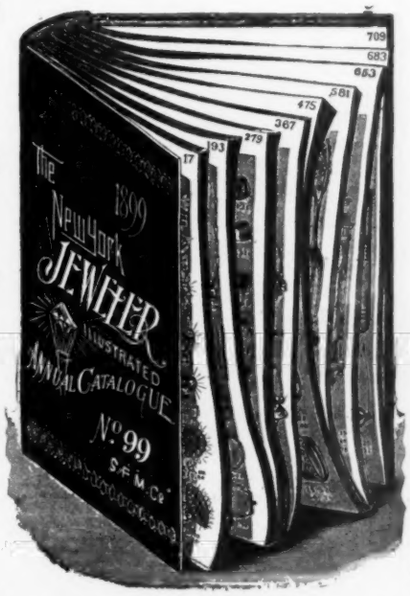
Illustrating Choice, Reliable and Complete Lines from Our 22 Departments.

Fine Mechanical TOOLS.

Mathematical Instruments, Etc.

Sterling Silver and Silver Plated Flat and HOLLOW WARE.



Watches, Diamonds. Jewelry, Optical Goods,

Silverware, Cut Glass, Clocks, Lamps,

Musical Merchandise.

Music Boxes, Canes and Umbrellas, Photographic Supplies, Etc. Watchmakers' Tools and Jewelers' Sundries Trade Work, Etc.

CLOSE TO CASH TERMS. **CLOSE TO CASH VALUES**

WE CARRY EVERYTHING THAT APPERTAINS TO THE TRADE.

Our business requires and we occupy the largest salesroom in our line in the Empire City's wholesale jewelry district. We extend every facility in accommodating customers towards furthering sales.

DEALERS INTERESTED SHOULD

SEND FOR OUR CATALOGUE. ADDRESS DEPARTMENT "S."

S. F. MYERS CO.,

Importers, Manufacturers and Wholesale Jewelers,

Myers Building, { 48 and 50 Maiden Lane, 33 and 35 Liberty St., } NEW YORK.

THE TRADE acknowledges our make of BUTCHERS' STEELS

THE BEST IN THE WORLD.

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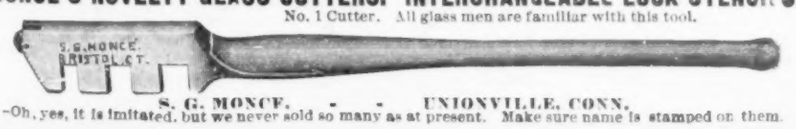
C. & A. HOFFMAN, Manufacturers. FRANKFORD, PHILA., PA.

MONCE'S NOVELTY GLASS CUTTERS. INTERCHANGEABLE LOCK STENCILS.

No. 1 Cutter. All glass men are familiar with this tool.



S. G. MONCE, - - UNIONVILLE, CONN.

-Oh, yes, it is imitated, but we never sold so many as at present. Make sure name is stamped on them.

New Razor Strop ! ! !

THE "YANKEE"

A 50c STROP FOR 25c. ! ! !

A Strop that will produce the keenest possible edge to any razor.

This Strop is mounted on a most attractive, yellow, black and red Show Card, and is guaranteed to sell 12 to 1 of any other 25c. Strop on the market! Margin to dealer remarkably liberal! $2.00 per doz.

Made of a fine piece of selected horsehide and heavy hose canvas back.

Carefully prepared with our celebrated Razorine.

Have a Trial Lot. The rapid sale will amaze you.

Fac-simile of Display Card.

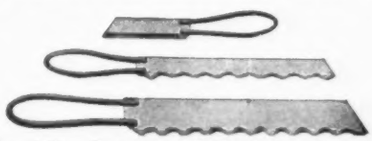
"RAZORINE" Sharpens All Razors. $12 per Gross.

Don't miss the opportunity of having the greatest sellers you ever had.

RAZORINE MFG. CO., LTD., 134 Pearl St., N. Y.

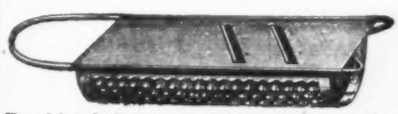
London, England.

WE MAKE THE MARKET PRICE



No. 100. Crescent Knife Set. Best in the world.

Famous Parer and Slicer. No wasting of material. Polished beech handle, nickel plated blade and ferrule.



Combined Grater and Slaw Cutter. The only one. Now seasonable.

Illinois Bicycles are the best bicycles. Sold cheaper than any other high-grade wheels. Remember the Illinois.

ILLINOIS CUTLERY CO.,

Decatur, Ills., U. S. A.

THE DOUBLE-TUBE LIGHTNING INSECT EXTERMINATOR

Kills, drives away and exterminates every living thing obnoxious to yourself, your animals or your crops!

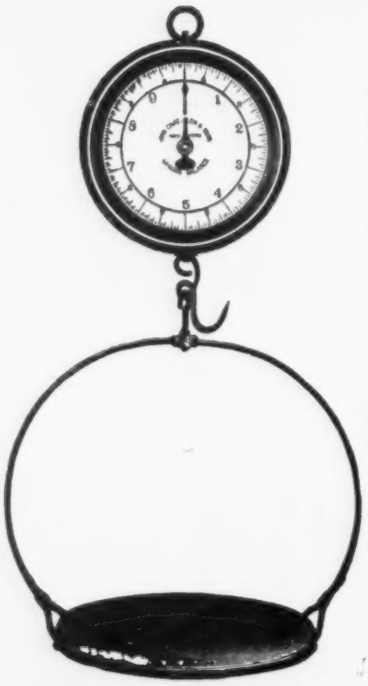
Send for Circular.

D. B. Smith & Co., Utica, N. Y.

CHATILLON'S SPRING SCALES.

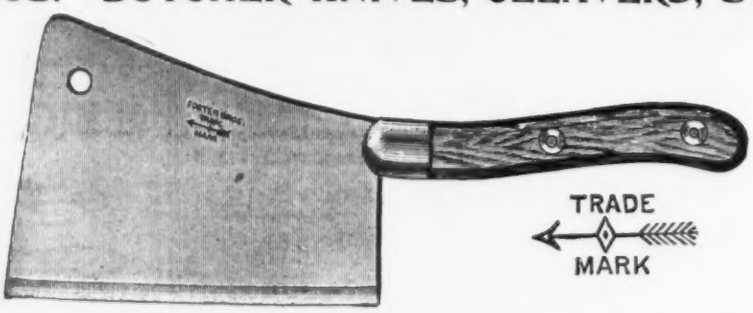
For more than **sixty years** we have carried on the business of making **Spring Scales,** and have made it OUR SPECIALTY.

All our Scales are warranted to weigh accurately and to be perfect in workmanship.



Our experience in the business, together with our unequaled facilities for manufacturing, enables us to produce a superior article, and thus to maintain the well-known reputation of **Chatillon's Spring Scales** as above that of other makes.

FOSTER BROS.' BUTCHER KNIVES, CLEAVERS, STEELS, &c.



These Tools are recognized in the Markets, Packing Houses and Abattoirs throughout the U. S. as the standard of excellence, quality being the first consideration. We carry in stock every style and size of Knives, Cleavers and Steels used in cutting meat; also Knives for kitchen use in Hotels, Restaurants and for domestic purposes.

FRIEDERICH DICK'S MAGNET DIAMOND STEELS.

By careful workmanship and the use of a special steel in their manufacture they have become famous throughout the world.

PHOENIX KNIFE CO.'S POCKET KNIVES.

Finest quality American Pocket Cutlery in large variety—Knives that are good sellers, and will give satisfaction to the user.

JOHN CHATILLON & SONS,

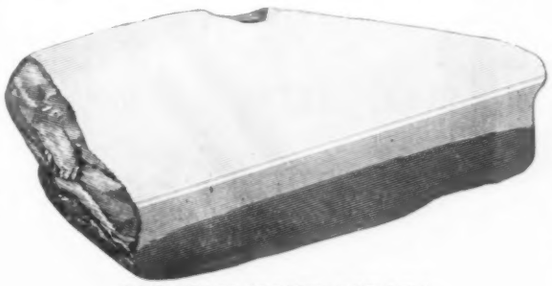
ESTABLISHED 1835,

85 to 93 Cliff St. and 12 Jacob St., - - - NEW YORK CITY.

RAZOR HONES.

The Manager of our Razor Hone Department spent five months in Europe last Summer and Autumn selecting Hones and arranging for a reliable supply of these goods in all varieties.

We cordially invite inspection of our stock at our New York store, 151 Chambers St. We believe it to be the largest and best ever seen in America.



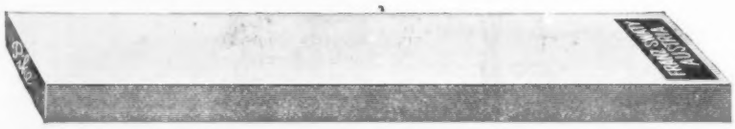
BELGIAN HONE SCRAPS.

BELGIAN HONES.

All Grades. All Sizes.
Lowest Prices.

Genuine Escher Water Hones.

Sole American Agents for this celebrated line.



Swaty Hones.

The fastest cutting of all Razor Hones and rapidly becoming the most popular. Always uniform in quality.

French and Bavarian Grindstones For Concaving Razors.

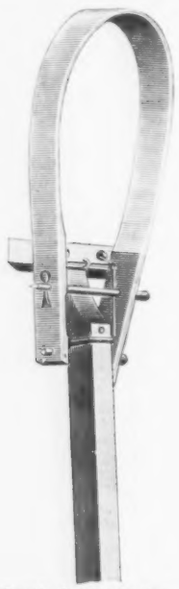
ALL SIZES.

SEND FOR PRICE LISTS.

The Pike Mfg. Company,

PIKE STATION, N. H., U. S. A.

NEW YORK STORE,
151 CHAMBERS ST.



ELY'S DANDY No. 1.
This Poke is the same pattern and has the same principle of operation as the Akron Poke.

ELY'S DANDY No. 2.
This Poke is the same pattern and has the same principle of operation as the "Success" Poke.

ELY'S DANDY No. 3.
The lightest, easiest to adjust and most simple Double Prong Poke made. Nothing to get out of order. Furnished with strap or snap.

Best Poke

... ON EARTH.

500 000 NOW IN USE.

Points of Superiority.

1st—It's ten times stronger than any wood poke.

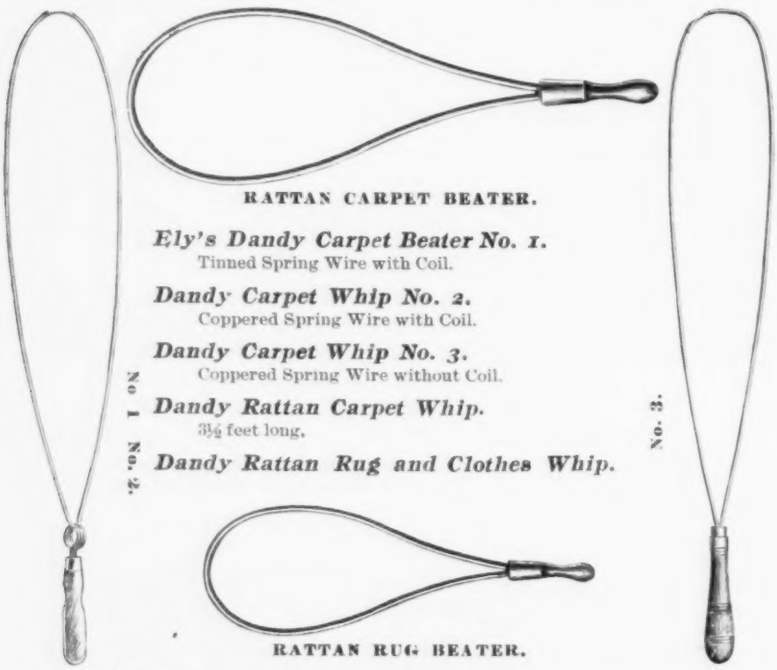
2d—The weather does not affect it.

3d—Does not wear the mane or make the neck sore.

4th—The brail is always in front and does not come in contact with the legs and interfering in feeding.

5th—If the brail breaks it can be replaced in five minutes.

KRICK'S METALLIC ADJUSTABLE POKE.



RATTAN CARPET BEATER.

Ely's Dandy Carpet Beater No. 1.
Tinned Spring Wire with Coil.

Dandy Carpet Whip No. 2.
Coppered Spring Wire with Coil.

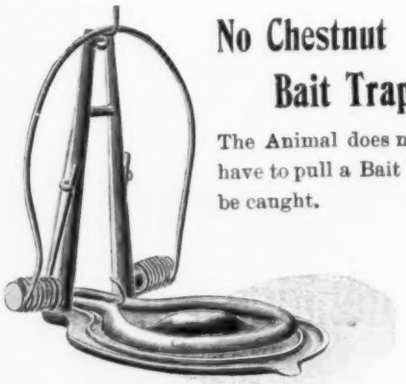
Dandy Carpet Whip No. 3.
Coppered Spring Wire without Coil.

Dandy Rattan Carpet Whip.
3½ feet long.

Dandy Rattan Rug and Clothes Whip.

No. 1. No. 2. No. 3.

RATTAN RUG BEATER.



No Chestnut Bait Trap!

The Animal does not have to pull a Bait to be caught.

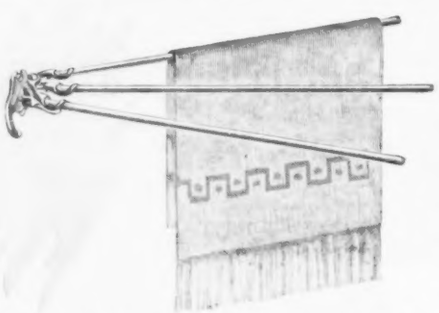
KRICK'S DANDY TRAP.

IT IS A PLATFORM TRAP.

When set at the hole or in runways the animal cannot pass without being caught. THE TOOTHED BASE gives it better holding properties than any other trap. Being made of malleable iron it cannot warp, split or rot as other bail traps do. The strike wire can be made stronger at any time by throwing ends of wires out of seats and bending them short backwards near the coils. The animal can be dumped without touching with the hands by throwing ends of bail wire out of seats.

CAMP STOOL.
Seats made of 10 ounce Duck. Made from Hard Wood, seat 14 x 12 inches.

Ely's Dandy Towel Rack.



Three arms 18 in. long. Nickel Plated Castings.

Ely's Dandy Hay Knife.

This article needs but little talk, as it is not new to the trade or to the user.

It has been on the market for a number of years. We know that one man can do more and easier with this knife than two can do with any other.

It is made of malleable iron and the best steel section knives. We are putting it on the market at a price that any one can afford to have one. Any dealer wanting an article that he can recommend to his friend or customer and know that he is doing him a favor this is the article.

If your Jobber does not keep them, write us. Manufactured by

THEO. J. ELY MFG. CO., GIRARD, PA., U. S. A.

We are the largest producers in the world of Cross Cut Saw Handles, Mop Sticks and Horse Pokes.

RUSSELL & ERWIN MANUFACTURING COMPANY,

NEW BRITAIN, CONN.

NEW YORK. PHILADELPHIA. CHICAGO. BOSTON. BALTIMORE. LONDON.

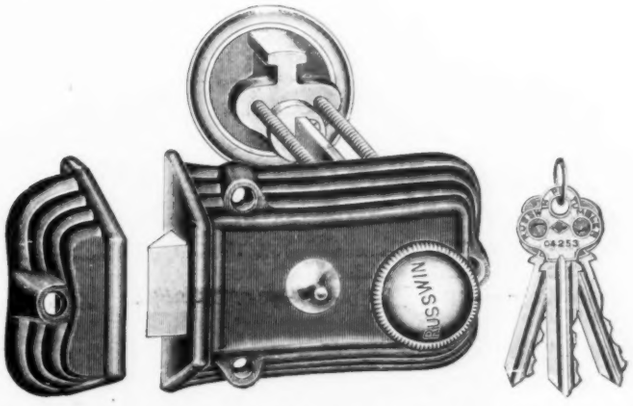
"RUSSWIN" PIN TUMBLER CYLINDER DOOR LOCKS.

"COLUMBIA" CYLINDER DOOR LOCKS.

WROUGHT STEEL DOOR LOCKS. "EASY SPRING" MORTISE DOOR LOCKS.

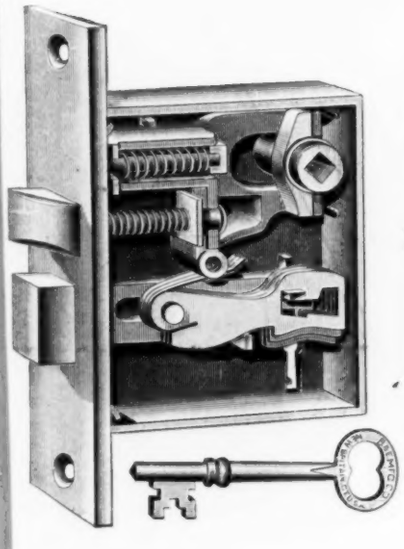
WROUGHT STEEL AND BRASS PADLOCKS.

RIM NIGHT LATCH, No. P 1290.



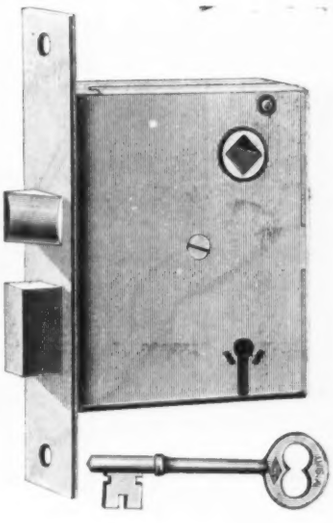
RIM NIGHT LATCH, No. P 1290.

"RUSSWIN" PIN TUMBLER CYLINDER LOCKS.



"Easy Spring" Mortise Knob Locks, 3½ and 4 inches. Of Superior Construction, Finish and Style.

Wrought Steel Mortise and Rim Locks and Latches. Excelling in Lightness and Strength and Novelty of Finish.



PADLOCKS.

IRON PADLOCK, "MAIL POUCH." Bronze Plated Finish No. 7½. Nickel Plated Steel Key.

No. 7425.

Nos. 1415 to 1515.

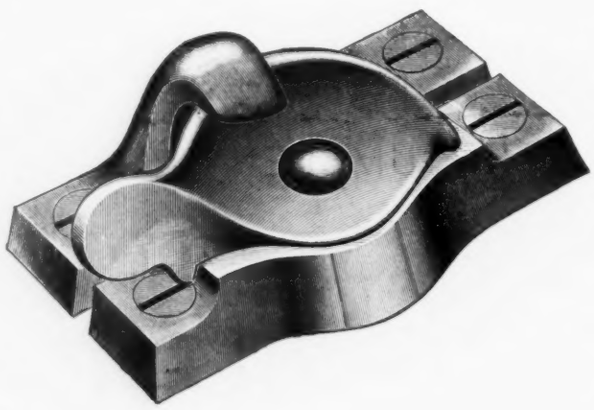
WROUGHT METAL PADLOCK, "COLUMBIA." Ivory Black, Oroide Finish, and Brass Cases.

FITCH SASH LOCKS.

(Patented July 21, 1896. Aug. 24, 1897.)

By reason of their conspicuous merit, have won a recognized place among the staples of Builders' Hardware.

Repeated endorsements by representative Architects and Builders has made them a profitable acquisition to the stocks of a constantly increasing number of the largest houses in the Trade.



A Sash Lock to be "good for anything" must securely lock a window. The Fitch Sash Locks do much more: Adjust the meeting rails—taking up the sag; stop all rattle—automatically drawing the two sashes together; and prevent disfigurement of the top sash—keeping the window "locked or unlocked." Strong, well made and durable. Styles "ornamental" and "plain"—all finishes.

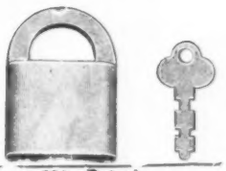
Give them a trial. Small and large sizes in all finishes. Catalogue and price on application. Sample Free.

THE W. & E. T. FITCH CO., - New Haven, Conn.

142. Brass.
153. Nickel Plated.

340. 1¼ in.

341. 1⅜ in.



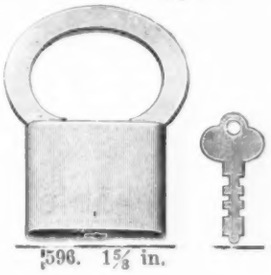
395. 1¼ in.

370. 1½ in.

2020.

357. 1¾ in.

311. 1⅞ in.



596. 1⅝ in.

The Mallory Wheeler Co.

New Haven, Conn., U. S. A.

THE OLDEST AND LARGEST PADLOCK MAKERS IN THE COUNTRY.

Our Padlocks are used all over the world.

A full and complete stock carried at our Factory and Warehouses,

18 Murray St., New York, 15 West Lake St., Chicago, Ill.

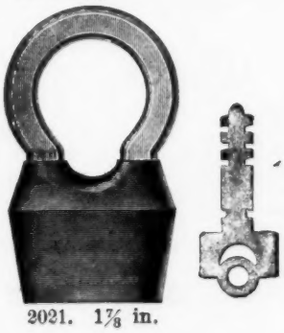
Our new 1899 catalogue is ready and will be mailed on application.

247. 2⅛ in.

239 or 249.

491.

265. 1⅝ in.



2021. 1⅞ in.

393. 1⅞ in.

470. 2 in.

2012. 2¼ in.

450. 2 in.

580. 2¼ in.

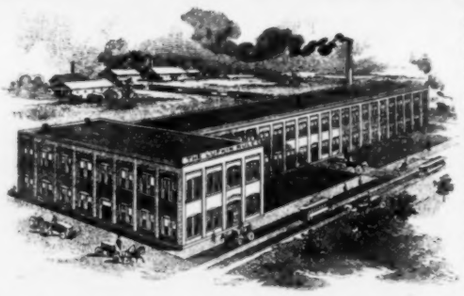
485. 2¼ in.

THE LUFKIN RULE CO.

MEASURING TAPES

Our line of Tapes is the most extensive made and no Hardware stock is complete without them.

"Reliable" Steel Tapes
"Rival" Steel Tapes
"Challenge" Steel Tapes
Pocket Steel Tapes
Metallic Warp Tapes
Sterling Linen Tapes
Ass Skin Tapes
Patent Leather Tapes
Bend Leather Tapes
Steel Rules
Lumber Rules
Boot Calks
Glass Cutting Boards
etc., etc., etc.



We believe in EXPANSION!

We have expanded our trade into every state in the Union, Canada, South America, Mexico, England and Europe.

WHY? Because our goods are superior to all others.

OUR AIM is, and always has been: To make first-class goods and please our customers, and the result is,

WE LEAD ALL OTHERS.

Send for Catalogue

Main Office and Factory:

SAGINAW Mich., U.S.A.

N. Y. City Branch:
No. 290 STEWART BLDG.,
where we carry a complete stock.

They Excel in . . .

Easy running.
Quick freezing.
Economy.
Convenience.
Practical Results.

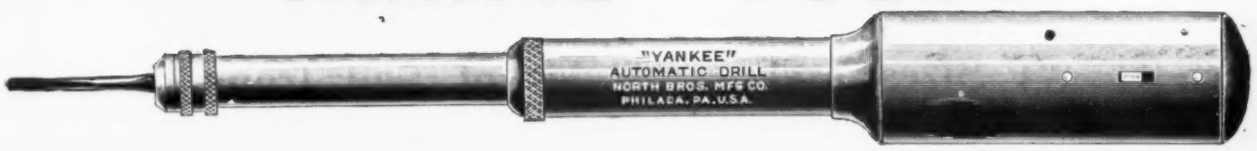
They are . . .

Well advertised.
In demand.
Easily sold.
Satisfactory in use.
Of known reputation.

ICE CREAM FREEZERS

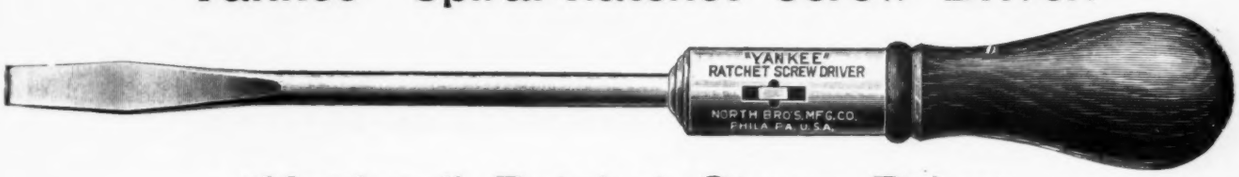
Our '99 "Freezer Book" Tells all About Them. Sent Free.

"YANKEE" TOOLS.



"Yankee" Automatic Drill.

"Yankee" Spiral-Ratchet Screw Driver.



"Yankee" Ratchet Screw Driver.

SEND FOR THE "YANKEE TOOL BOOK."

NORTH BROS. MFG. CO., = Philadelphia, Pa., U. S. A.

New York Agents: JOHN H. GRAHAM & CO., 113 Chambers St.

ESTABLISHED 1844.

A. C. WILLIAMS, Ravenna, O., U. S. A.,

MANUFACTURER OF

Sad Irons, House Furnishing Specialties and Hardware.

We produce the greatest variety and the greatest number of Sad Irons of any Factory in the World.

53 Sizes and 44 Styles of Sad Irons.

WE MANUFACTURED AND SOLD

1,000,000 SAD IRONS IN 1896.
1,258,000 " " " 1897.
1,580,000 " " " 1898.

Our goods in 1898 went to every State and Territory in the U. S., to England, Germany, France, Russia, Denmark, Sandwich Islands, South Africa, Australia, New Zealand, Mexico, Argentine Republic, Trinidad, &c.

STYLE, QUALITY AND FINISH FULLY GUARANTEED.

SURPLESS, DUNN & CO., 55 Warren St., New York, Sole Export Sales Agents.

HOGE & SWIFT, Portland, Oregon, Agents for the Northwest.

WRITE FOR CATALOGUE TO

A. C. WILLIAMS, Ravenna, O., U. S. A.

ESTABLISHED IN 1844.

A. C. WILLIAMS, Ravenna, O., U. S. A.,

MANUFACTURER

Ice Shavers, Ice Chisels, Ice Picks, Lemon Squeezers, House Furnishing Specialties.

A Very Large Variety of Unexcelled Quality and Finish and our Prices are Right.

No. 291.

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No. 293.

No. 294.

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No. 593.

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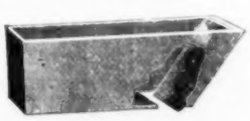

No. 490.

No. 389.

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No. 391.

No. 395.

No. 392½.

No. 492½

No. 392.

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For Prices and Terms for Export apply to our Export Sales Agents:

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ESTABLISHED IN 1844.

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MANUFACTURER OF

Riveting Machines.

Cast Hammers,

16 Styles and Sizes.

Cast Hatchets,

10 Sizes and Styles.

Screw Drivers.

House Furnishing Specialties and Hardware.

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A. C. WILLIAMS, Ravenna, O., U. S. A.,

MANUFACTURER OF

Dumb Bells.

All Sizes, from 1 lb. to 150 lbs. each.

Cast Wagon Skeins,

Over 50 Sizes and Patterns.

Columbia Lifters,

Stove Lifters,

Sad Iron Heaters.

House Furnishing Specialties and Hardware.

SURPLESS, DUNN & Co., 55 Warren St.,
Export Sales Agents.

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Agents for the Northwest.

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A. C. WILLIAMS, Ravenna, O., U. S. A.

TAINTOR
POSITIVE SAW SET.

THIS IS NOT THE CHEAPEST SAW SET IN THE MARKET—

IT IS THE BEST.

We have sent them all over the country on approval and never had one returned, but get numerous letters like the following:

TAINTOR MFG. CO., N. Y. ALANSON, MICH., Aug. 1, 1898.

Enclosed please find a P. O. money order for $1.00 for Saw Set sent me on trial.
You can say for me, if you wish, it is the only saw set that will set a saw perfect, and is the only one that will not leave a saw in a circle after setting. If I could not get another, a five-dollar bill would not buy it. I have worked at carpenter work for 26 years steady, and have used all kinds of sets, but the Taintor is the only perfect Set made.

I remain, respectfully yours, JOSEPH W. WEYMOUTH.

Order from your Jobber; if he cannot supply you, write to

WIEBUSCH & HILGER, Ltd., Sole Agents,

9-15 Murray Street, New York,

MANUFACTURERS' AGENTS AND IMPORTERS.

ALSO SOLE AGENTS FOR

Essex Horse Nail Co.,
Horse Shoe Nails.

Clark & Parsons Co.,
"Lightning" and "Maine" Hay Knives, Brook's New Scythe, Corn Hooks, Etc.

"Seymour" Shears and Scissors.

Challenge Razor Works,
Razors, Erasers and Farriers' Knives.

Press Button Knife Co.,
Press Button Knives.

Taintor Mfg. Co.,
Taintor Positive Saw Sets

Hilger & Sons,
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Burgon & Wilkinson, Ltd.,
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NEW YORK MANUFACTURERS' HEADQUARTERS FOR

Bridgeport Chain Co., Chesterman's Tapes, Roses' Trowels,
Peter Wright's Anvils, Hoffman's Steels, Pope's Farriers' Knives,
Wade & Butcher Razors and Tools. Brades' Trowels.

Approved Methods of Arranging and Displaying Hardware.

THE AMERICAN HARDWARE STORE.

By R. R. WILLIAMS, Hardware Editor of *The Iron Age.*

450 PAGES. 500 ILLUSTRATIONS. PRICE $3.00.

SUMMARY OF CONTENTS.

General Arrangement.
Office.
Shelving.
Galleries.
Elevators and Cranes.
Show Windows.
Counters.
Counter Showcases.
Upright Showcases.
Ceiling Arrangement.
Sampling Goods.
Signs in the Store.
Pillars for Displaying Goods.
Scales.
Roll Paper.
Nails.
Farm and Garden Tools.
Scythes.
Bolts, Screws, etc.
Crosscut Saws.
Hand Saws.
Edge Tools.
Planes.
Squares.
Plumbs and Levels.
Axes and Hatchets.
Cutlery.
Sporting Goods.
Locks and Door Trimmings.
Sandpaper.
Screen Wire Cloth.
Wire.
Files.
Horseshoes.
Chains.
Belting.
Rope.
Handles.
Sleds.
Scale Beams.
Farm Bells.
Malleable Fittings, etc.
Pumps.
Pipe and Tubing.
Axles.
Glass Racks.
Glass Cutting Tables.
Paints and Colors.
Oils, Turpentine and Varnish.
Brushes.
Oilcloth.
Seeds.
Bird Cages.
Lamps.
Stoves.
Iron and Steel.

This is the only complete work on the subject.

It gives practical suggestions in regard to the arrangement of the store—office, shelving, counters, racks, bins, sampling, window display, etc., etc.

It describes the practice of Hardware merchants in all parts of the country, and many different methods of accommodating and displaying leading goods.

Illustrations and detailed descriptions with measurements are given, so that Hardware merchants can readily adopt the methods described in the volume.

This book with its mass of practical and detailed information will be of great service—

To progressive Hardwaremen who are desirous of improving their stores;

To those who are intending to open new stores;

To those who want information as to the best methods of displaying and accommodating any given class of goods;

To those who wish to know how other merchants arrange their stores;

To those who are interested in the question of window display;

To those who are extending their business in any direction;

To those who desire practical suggestions in regard to the arrangement and sale of the different Hardware articles.

DAVID WILLIAMS COMPANY, Publishers, 232-238 William St., N. Y.

One of our New Patterns.

It has a removable ice chamber but with objectionable features obviated, and combined with that wonderful "MAINE" Ice Grate, sliding shelves, swing bass, and new bronze lever locks.

Maine Manufacturing Company,

Nashua N. H. U. S. A.

White - Mountain - Refrigerators.

KNOWN ALL OVER THE WORLD.

Our elegant 1899 catalogue now ready.

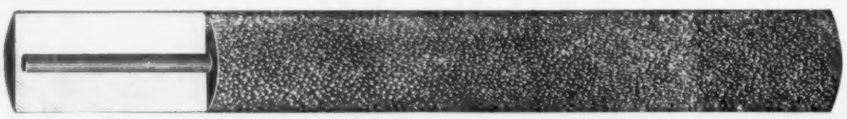
One of the finest Refrigerator factories in the world.

Our factory is never idle. We have not shut down since 1874.

A perfect and complete Refrigerator is manufactured every six minutes.

Over half a million people are using "White Mountain" Refrigerators. Everyone satisfied.

Branch Offices: *Boston, New York City, Columbus, Minneapolis, Denver San Francisco, Dallas, Tex., and St. John, N. B.*



(SECTIONAL VIEW.)

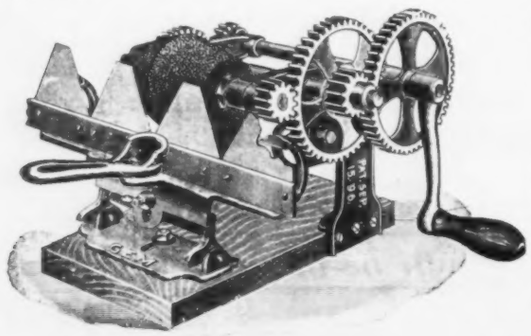
"THE GEM" Corundum Scythe Stone

THIS Stone has a steel bar center and you cannot break it. It will last ten times as long as a natural stone and cut faster. It is water-proof, is made of corundum, and by an improved process of manufacture we can now sell it at a price equal to the natural stone. Write for sample and discounts.

(SECTIONAL VIEW.)

"THE DIAMOND" Corundum Steel.

THIS Steel has almost superseded the metal steel for sharpening carving and kitchen knives. Why? Because it will sharpen a knife quicker and better and its cost is less than one-half of the metal steel. It is water-proof, has a steel extending its entire length, making it very strong. Every hardware dealer should carry them. Write for sample and discounts



"THE GEM" AUTOMATIC COMBINATION SICKLE AND TOOL GRINDER. WITH SAW GUMMING ATTACHMENT.

Third Season. 43,493 In Actual Use. Why?

Because it is the only one that grinds automatically and perfectly; it grinds faster than any other machine; it cannot draw the temper of knives; it grinds out nicks; any one can operate it alone; it is the only machine to quickly and perfectly sharpen all kinds of farm tools; it will grind ledger plates, dics, harrows, cultivator teeth, plow shares, etc., also gum a saw as quick as any power machine. The only sickle grinder combining all these points.

Write for prices, discounts and territory.

CHICAGO WHEEL & MFG. CO., 39-45 W. Randolph St., CHICAGO, ILL.

50% more sales can be made by many Hardware Stores if goods are effectively displayed. THE AMERICAN HARDWARE STORE contains 450 pages and 500 illustrations and describes methods employed by the most successful dealers.

PRICE, THREE DOLLARS.

DAVID WILLIAMS COMPANY, Publishers,
232-238 William St., N. Y.

Special net prices upon application. | *15th Annual Catalogue now ready.*

MACKINAW REFRIGERATOR CO.

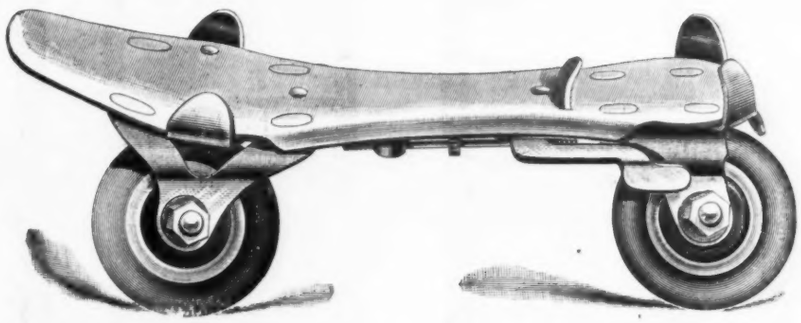
Factory, GRAND HAVEN, MICH.

105 Varieties of Refrigerators

Offices, 106 Chambers St., NEW YORK.

Foot Cycle Roller Skates.

VULCANIZED RUBBER WHEELS.



WITH PLAIN BEARINGS OR WITH ROLLER BEARINGS.

As FASCINATING as RIDING a WHEEL.

UNION HARDWARE CO.,

TORRINGTON, CONN.

New York Office, 95 Chambers Street, in charge of TOWER & LYON.

CAUTION!! Be careful to get the genuine TOWER'S CHAMPION SCREW DRIVERS,

Clearly Indicated by our Trade-Mark CHAMPION on Every Blade.

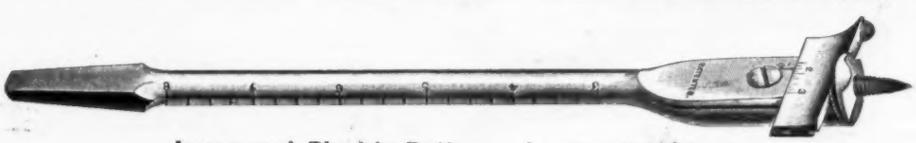
None others have our Solid Bolster and Guaranteed Special Quality and Temper.

Mechanics and Amateurs.

Cabinet.

Machinists.

See that the word "CHAMPION" is on each Screw Driver.

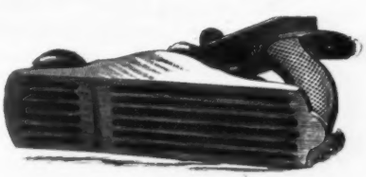


Improved Clark's Pattern. Lavigne's Patent.

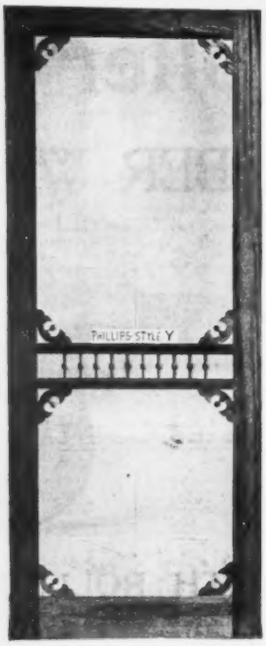
Chaplin's Patent Iron Planes

Advertise themselves by their QUALITY, STYLE and FINISH.

Both Smooth Face and Corrugated Face and Ribbed Bottom.

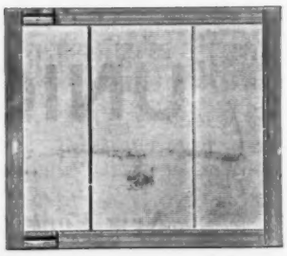


TOWER & LYON, 95 Chambers St., New York City.



Notwithstanding the amateur prices in vogue, (1 doz. for 2 pins, 2 doz. for 3 pins, &c.), they are not made from the scrap heap nor in a kindergarten school.

THE A. J. PHILLIPS CO., Fenton, Mich.



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OF LEMONS, LOOK!

Here are six kinds of Lemon Squeezers —we make six others. Have all kinds to suit everybody. They are the best and cheapest Squeezers made.

All who sell squeezers and don't buy ours, lose an opportunity for profit.

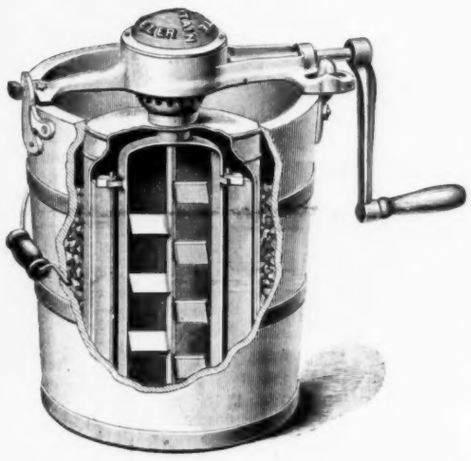
Also ICE GOODS, SHREDDERS, PLANES, PICKS, ETC. . . . .

It costs but a penny to ask and receive valuable information. Let us hear from you.

Logan & Strobridge Iron Co.,

New Brighton, Pa., U. S. A.

WHITE MOUNTAIN FREEZERS



have for many years secured the largest sale of any ice cream freezer in the world, and have always been sold on their determined and exclusive merits.

Every *WHITE MOUNTAIN FREEZER* is made of the highest grade materials, carefully fashioned by experienced workmen, and they practically (in family use) never wear out.

No other freezer works as smoothly, or can produce in so short a time as large a quantity of fine quality cream.

Positively the Best Freezer Known.

MANUFACTURED EXCLUSIVELY BY

The WHITE MOUNTAIN FREEZER CO., Nashua, N.H.

IT COSTS NOTHING . . .

For the Additional Room

that you can make use of at the top in your stores, if you will build your shelving to ceiling and equip same with a system of the

Milbradt Rolling Step Ladders.

They will make it as handy for you to show goods from the top shelves as any other, and the advertising that your business will gain by modernizing your store with high shelving and ROLLING LADDERS will more than pay for the improvements.

The Milbradt Rolling Step Ladders are the very latest improved and most up to-date on the market, are gotten up in first-class manner only, made to order and to fit all kinds of shelving and to suit all purposes.

Write for a descriptive catalogue which shows different styles of ladders and tells all about them.

Address

G. A. MILBRADT & CO.,

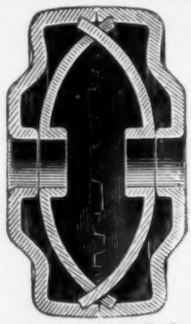
1922 and 1924 North Broadway, ST. LOUIS, MO.

TRACK PLATE SOCKET.

Experts Disagree on almost Everything,

BUT WHEN THE SUBJECT TOUCHES UPON THE SUPERIORITY OF

STANDARD BALL-BEARING CASTERS



SHOWING CONSTRUCTION OF OUR HOLLOW WHEEL.

There is but one opinion, and that is that they are the

BEST CASTERS MADE.

BALL BEARING PLATE CASTER.

If your jobber does not handle them write direct to

Standard Caster and Wheel Co.,

603-607 West 36th Street,

NEW YORK.

BALL BEARING STEM CASTER FITTING STANDARD TRACK PLATE SOCKET.

THE AMERICA REFRIGERATOR FOR 1899

Is a marvel of BEAUTY and WORKMANSHIP.

It is much easier to sell the *"WORLD'S BEST"* Refrigerator, the *AMERICA*, than to sell an inferior one when the *BEST* costs no more.

Send for a sample to compare with one you are now using and be your own judge.

If you have not received our catalogue write for same and see what we have to offer.

THE BOWEN MFG. CO., Fond du Lac, Wis.

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GEO. H. BISHOP & CO.,

LAWRENCEBURG, IND. *CINCINNATI, O.*

The Kearney & Foot Co., salaried Eastern and Export managers, 100 102 Reade St., N. Y., where we carry a complete stock.

Rubber Tired TRUCK CASTER AND Wheels

No. 82 MARTIN CASTER
With Rubber Tires put on to Stay.

"TUCKER,"
"BOSS,"
"MARTIN"
PATENT.

Small Furniture Sizes made with POLISHED LEATHER TIRES FOR HARDWOOD FLOORS.

WRITE FOR NEW CAT. OF NEW GOODS.

Tucker & Dorsey Mfg. Co.,
INDIANAPOLIS, IND.,
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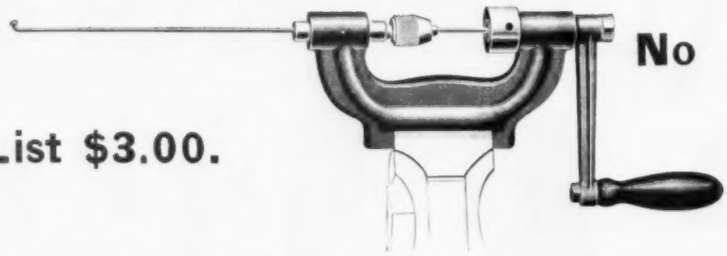
OUGHT TO USE
OUGHT TO SELL
OUGHT TO BUY

Peck's Bicycle Spoke Threader



No 50.

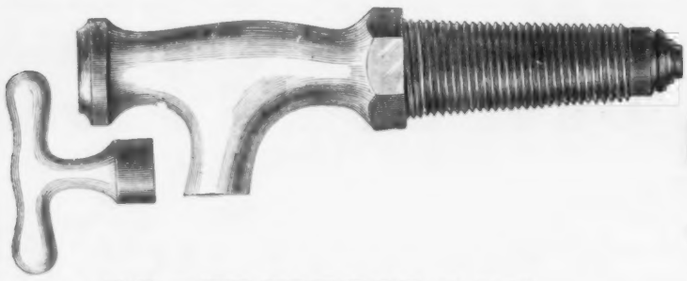
List $3.00.

This little device will prove a ***bosom friend*** to every bicycle repairer, machinist or amateur, or even ***the poor hardware man*** who sometimes or semi-occasionally may desire to cut a thread upon small wire. It can be readily secured in any Vise and the collet of the machine is arranged to hold dies 5/8″ in diameter, ***no dies*** however are furnished with the tool. The Chuck for holding the wire is a three-jawed one which will accurately centre the work and is fitted with a ***hollow spindle*** which slides back and forth in a splined groove. The Tool is well finished and practical.

Write for Discounts.

GOODELL BROTHERS COMPANY,

GREENFIELD, MASS., U. S. A.



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IMPROVED LOOSE KEY LIQUOR COCK.

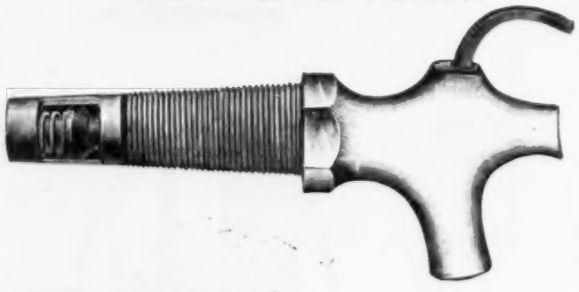
CLOSES INSIDE THE BARREL,
NOT A PARTICLE OF LIQUOR REMAINING IN BODY OF FAUCET.

McKENNA'S

BURGLAR PROOF LOOSE KEY LIQUOR FAUCET.

CLOSES INSIDE THE BARREL.

WRITE FOR PRICES.



A. & T. McKENNA,

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"ROME"
Nickel Plated Copper Tea Sets.

Sugar Bowl, Cream Pitcher and Spoon Holder.
Heavily Silver Lined.

"ROME"

NICKEL PLATED COPPER WARE.

Tea and Range Kettles, Tea and Coffee Pots, Silver and Tin Lined, Trays, Serving Dishes, Pitchers, Insets, Wash Basins, Wash Boilers, Tea Sets, Cups, Dippers, Stove Tanks, Cuspidors, Etc.,

Have you our new catalogue? If you handle Copper Ware you need it. We will forward and quote prices on request.

ROME MANUFACTURING COMPANY, Rome, N. Y., U. S. A.

"Rapid" Coffee Grinders and Pulverizers

No. 2½, $4.50

No. 5, $8.00

Sef-Priming and Measuring Pump

No. 97 Pump and Auger, $5.00

Enterprise

Patented Hardware

Specialties

are the Best Made

The Rapid Grinding and Pulverizing Coffee Mills are the only Mills made that Pulverize Perfectly. Thirty sizes and styles from $1.25 to $50.00.

The Old Reliable **Meat and Food Choppers** are superior to any in the market, and dealers make no mistake when they carry a line of them in stock.

Order through your Jobber.

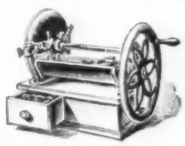
Send for Illustrated Catalogue, describing these and many other articles.

The Enterprise Mfg. Co. of Pa.

Third and Dauphin Streets

Philadelphia, Pa., U. S. A.

Rotary Smoked Beef Shaver



No. 125, $18.00

Meat and Food Choppers

No. 2, $1.50

No. 10, $3.00

No. 12, $2.50

"NEVER-BREAK" Best Finished Goods Made.

Always sweet and clean. FULL WEIGHT. Will not absorb grease. STUBBS GAUGE.

Steel Shovels, Scoops, and Spades.

Spiders, Kettles, Griddles, Stew Pans, Scotch Bowls, HIGHLY POLISHED AND TINNED.

ORIGINATORS OF STEEL HOLLOW WARE.

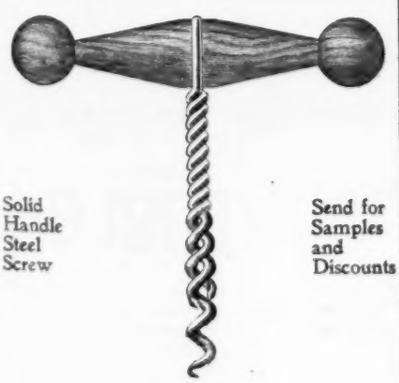
THE AVERY STAMPING CO., - - CLEVELAND, OHIO.

J. C. McCARTY & CO., 10 Warren Street, New York, Representatives.

New 99

LIST PER GROSS $3.00

MACHINE MADE AND CARDED



Solid Handle Steel Screw

Send for Samples and Discounts

Patent 337,309

ROCKWELL CLOUGH

ALTON, N. H., : : : : : U. S. A.

WE ARE THE SOLE MANUFACTURERS OF

STAR and BOSTON Heel Plates.

STARS MADE IN FIVE SIZES.

BOSTONS MADE IN FOUR SIZES

THE OLD RELIABLE,
THE BOSS,
THE RIVAL,
THE GEM

Outfits for Repairing Boots and Shoes.

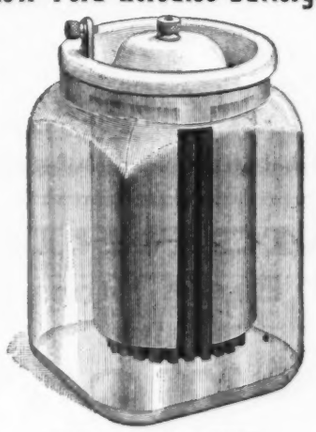
Patent Reversible Iron Stands and Lasts, Lap Lasts, Boot Jacks, Hammers, Foot Rests, &c.

STAR HEEL PLATE CO.,

58-81 Polk St., NEWARK, N. J.

WRITE FOR PRICES.

New Peru Hercules Battery.



THE VERY BEST.

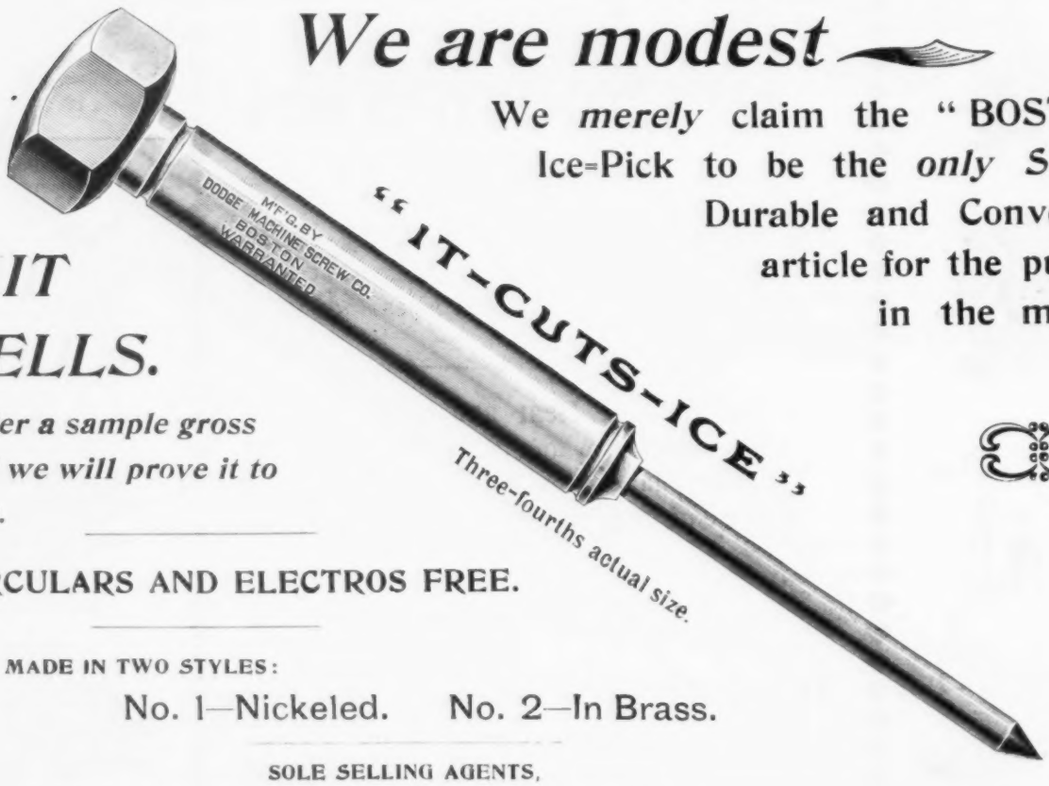
The circular zinc which surrounds the carbon is attached to the top in such a manner that it cannot come in contact with the carbon, making a short circuit impossible.

The carbon is hollow and is filled with a depolarizing compound. It has a fluted outside surface and has an E. M. force of 1.47 volts.

Sold in case lots of fifty. Write for prices.

Peru Electric Mfg. Co., Peru, Indiana.

The "BOSTON" Spring Ice Pick.



We are modest

We *merely* claim the "BOSTON" Ice-Pick to be the *only* Simple, Durable and Convenient article for the purpose in the market.

IT SELLS.

Order a sample gross and we will prove it to you.

CIRCULARS AND ELECTROS FREE.

MADE IN TWO STYLES:

No. 1—Nickeled. No. 2—In Brass.

SOLE SELLING AGENTS,

JOHN H. GRAHAM & CO. 113 Chambers St., New York City.

RETAIL PRICE, $25.00

WOOD'S ICE TOOLS.

The recognized Standard in the United States and Canada for over 60 years.

Send for Catalogue.

WM. T. WOOD & CO.,
Arlington, Mass., U. S. A.

Hardware Dealers—

Have you our Catalogue?

We buy entire stocks of merchandise at sheriffs', receivers', trustees', assignees', and manufacturers' sales. See our prices on Shovels, Hatchets, Axes, Rakes, Wrenches, Locks, Butts, Vises, Nails, Wire, Iron Roofing, Tools, etc. Write at once for catalogue.

CHICAGO HOUSE WRECKING CO., West 35th and Iron Sts., CHICAGO, ILLS.

MORRILL'S Perfect Saw Sets.

Bench Stops, Punches, Cutting Pliers and Car Sealers.

THE NO. 1 SAW SET.

TRADE MARK

Registered, Pat. No. 30572.
This Trade Mark is stamped on all Hardware Specialties of my make.

TRADE MARK

Registered, Pat. No. 30572.
This Trade Mark is stamped on all Hardware Specialties of my make.

NO. 1 IMPROVED.

For Hand, Band and Jig Saws, from the widest made down to 1-2 inch. The Sets are too well known for me to enlarge on them.

Write for Catalogue.

CHAS. MORRILL, 35 Warren St., N. Y.

TOOLS CUTTERS

SKILLED MECHANICS PREFER OUR TOOLS. LIVE DEALERS EVERYWHERE SELL THEM.

TOOLS CUTTERS

ESTABLISHED 1880.

THE L. S. STARRETT CO., BOX 55,

ATHOL, MASS., UNITED STATES.

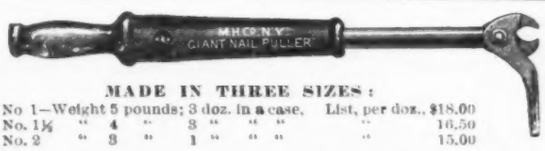
TOOLS CUTTERS

112 PAGE CATALOGUE of the BEST OF MODERN FINE MECHANICAL TOOLS AND CUTTERS, FREE.

TOOLS CUTTERS

THE GENUINE "GIANT" NAIL PULLER AND BOX OPENER.

All *GENUINE* Guaranteed Pullers have the word *GIANT* on the Handle.



MADE IN THREE SIZES:

No 1—Weight 5 pounds; 3 doz. in a case,						List, per doz.,	$18.00
No. 1½	"	4	"	3	"	"	16.50
No. 2	"	3	"	1	"	"	15.00

IMITATED BY MANY.

EQUALED BY NONE.

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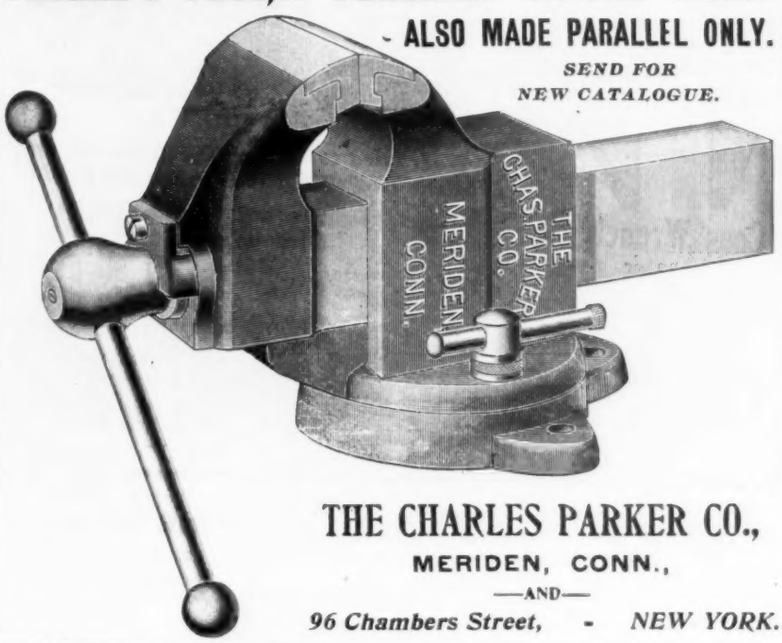
PARKER'S PATENT PARALLEL SWIVEL VISES.

ALSO MADE PARALLEL ONLY.

SEND FOR NEW CATALOGUE.



THE CHARLES PARKER CO.,

MERIDEN, CONN.,

—AND—

96 Chambers Street, - NEW YORK.

Family Grindstones For Home Use. Mounted Grindstones For Farm Use.

GRINDSTONES

For all Kinds of Grinding.

Write for catalogue and prices.

THE CLEVELAND STONE CO.,

Erie St., CLEVELAND, OHIO.

Branches: BOSTON, NEW YORK, CHICAGO.

The FIFIELD

AUTOMATIC DRILLING ATTACHMENT.

SELF-FEEDING.

No More PRESSURE on STOMACH or CHEST.

No More OLD MAN.

AUTOMATIC PRESSURE by CHAIN and SCREW always constant at any PRESSURE REQUIRED.

1305 Arch St., Philadelphia, Pa.

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Nippers and Plyers

Manufacture Most Complete Line in the United States.

Send for free Catalogue.

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FACTORY:
Utica, N. Y., U. S. A.

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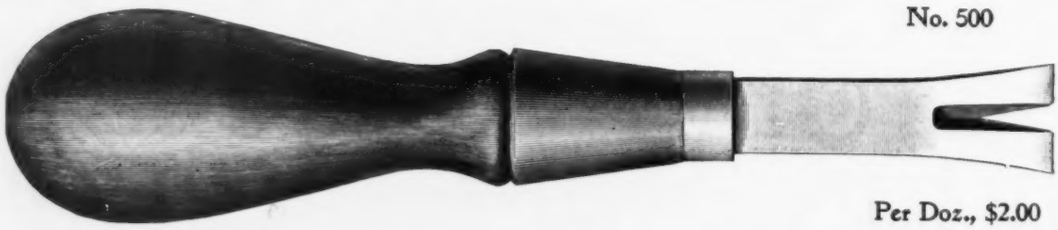

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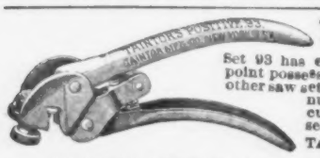

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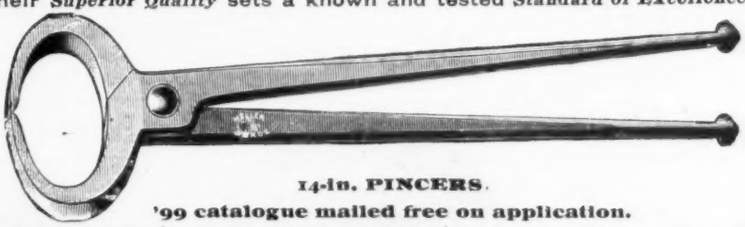

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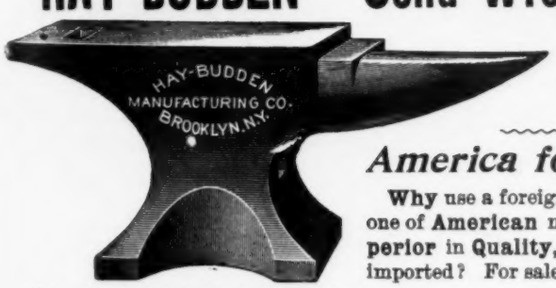

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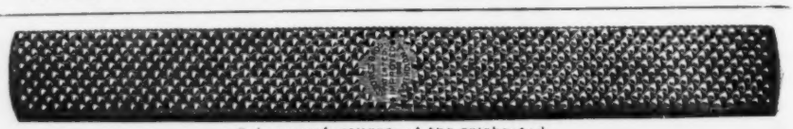

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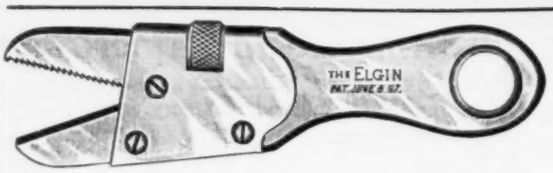

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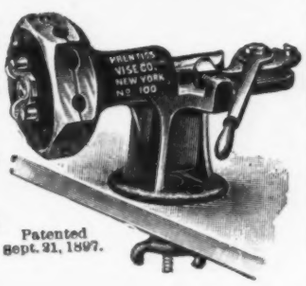

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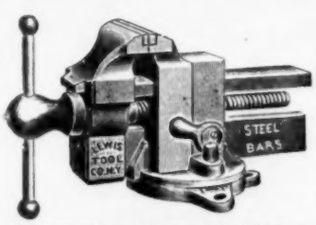

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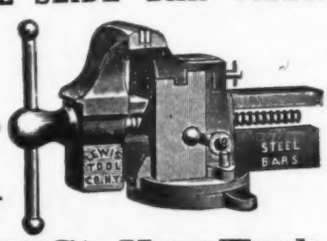

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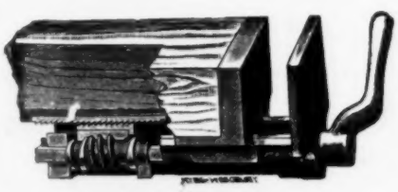

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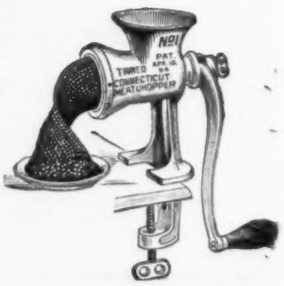

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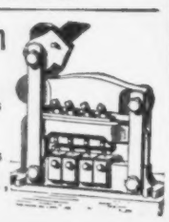

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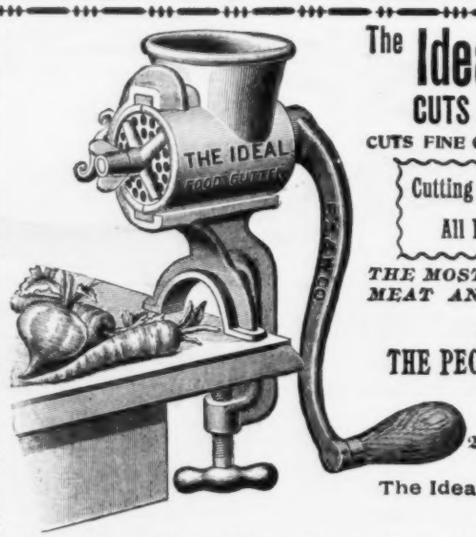

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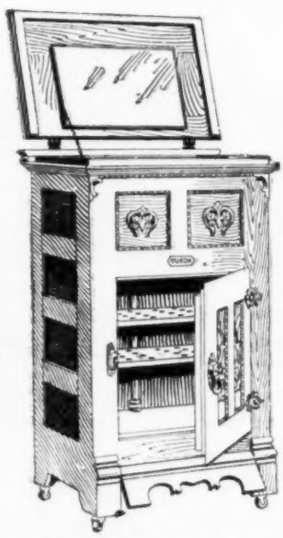

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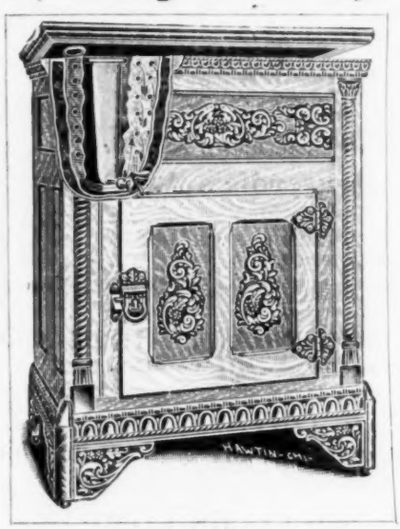

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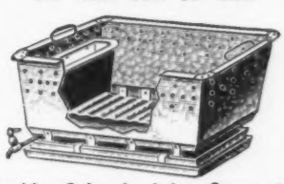

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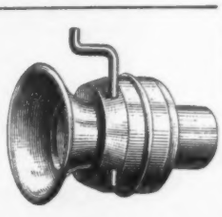

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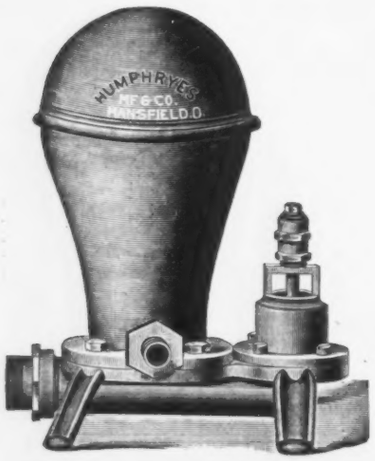

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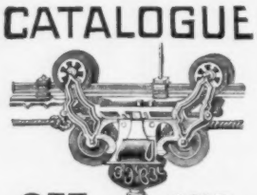

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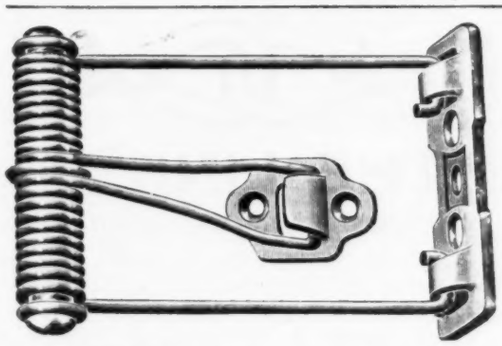

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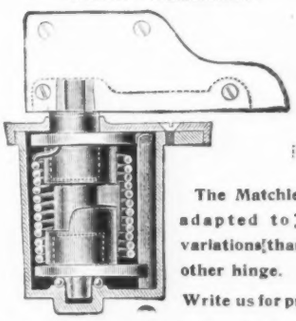

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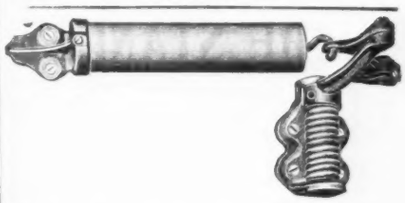

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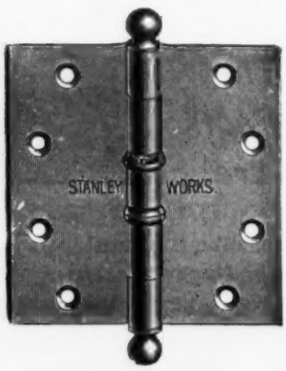

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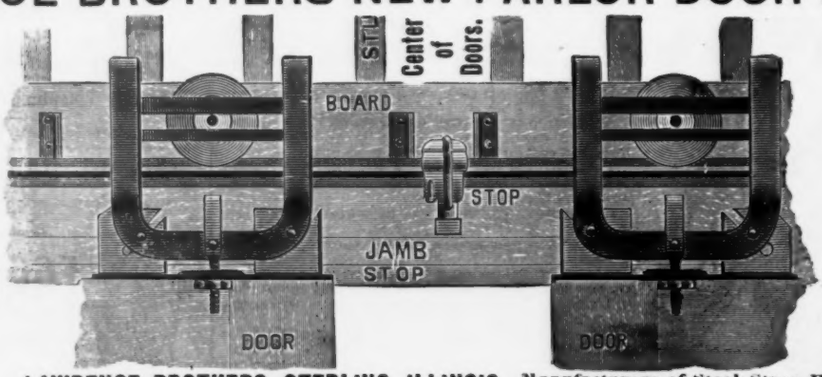

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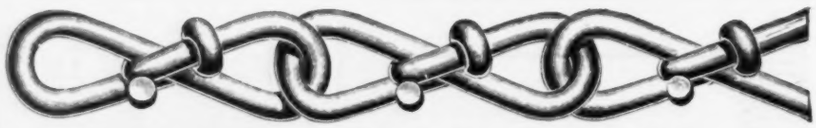

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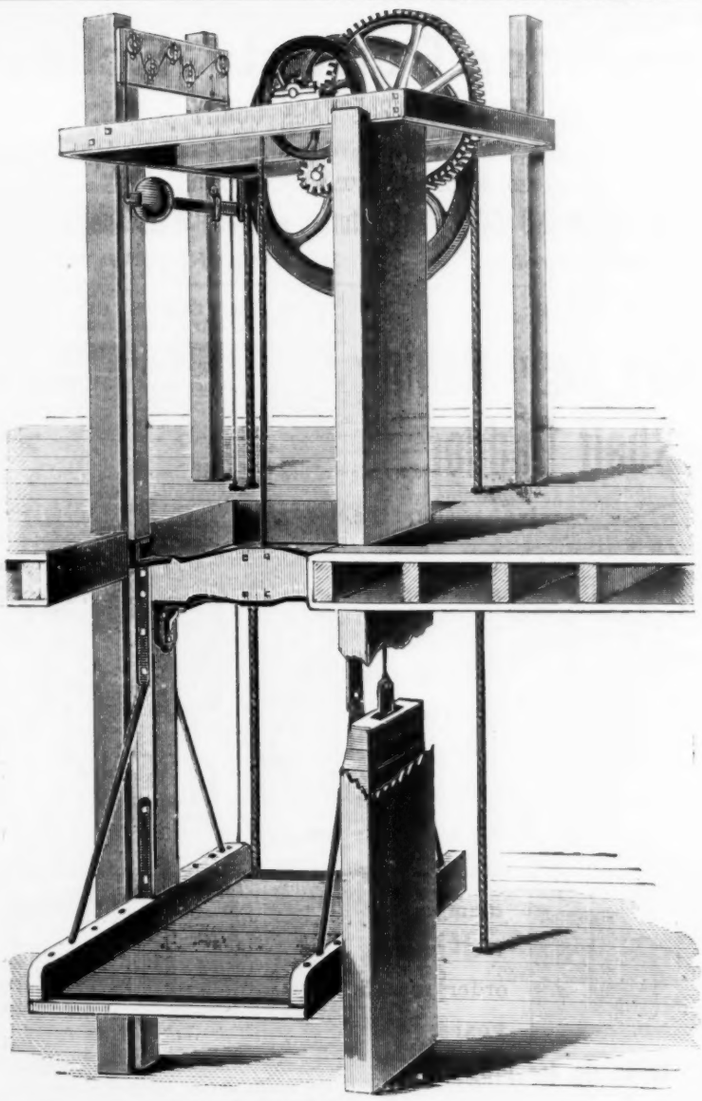

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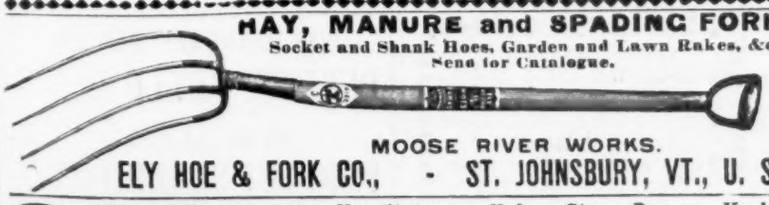

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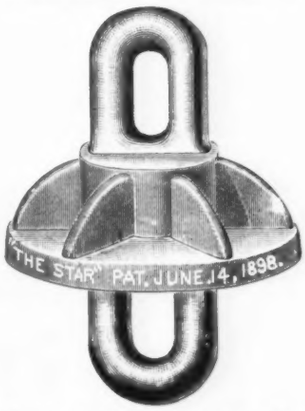

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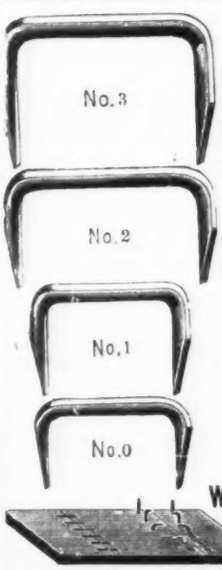

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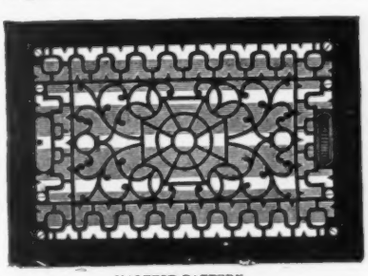

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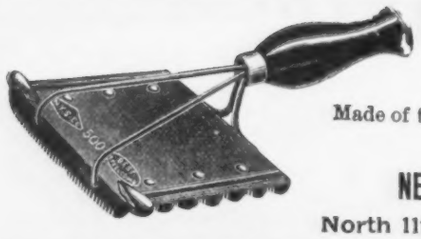

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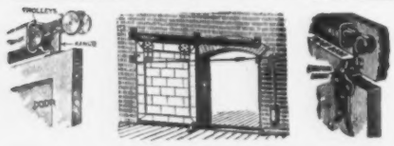

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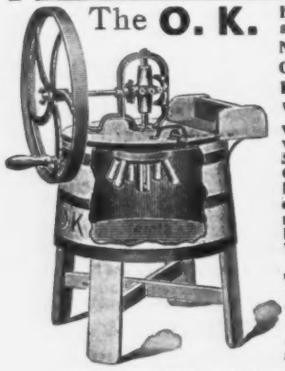

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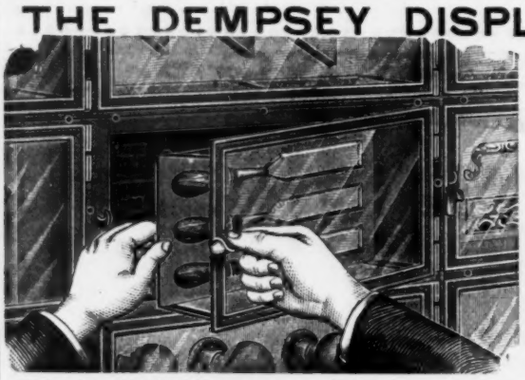

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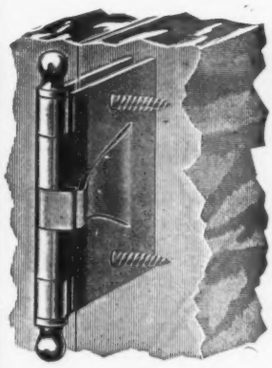

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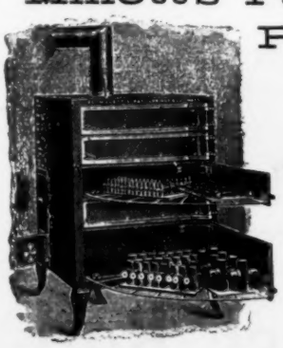

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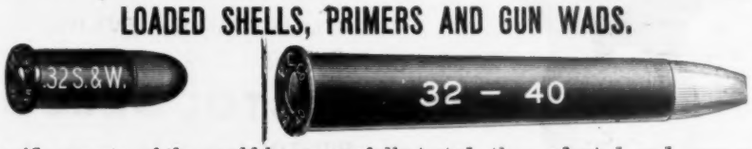

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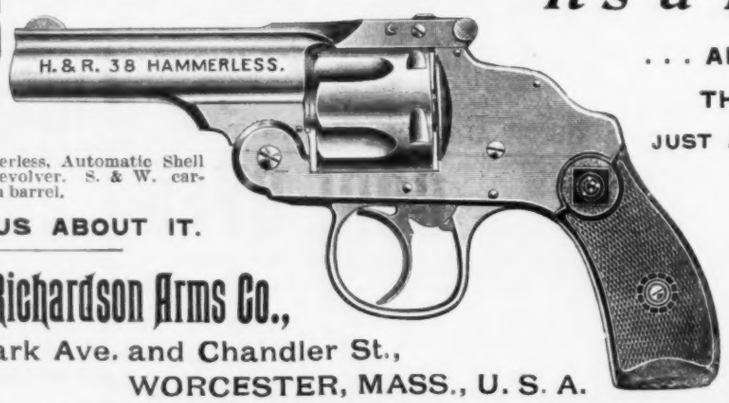

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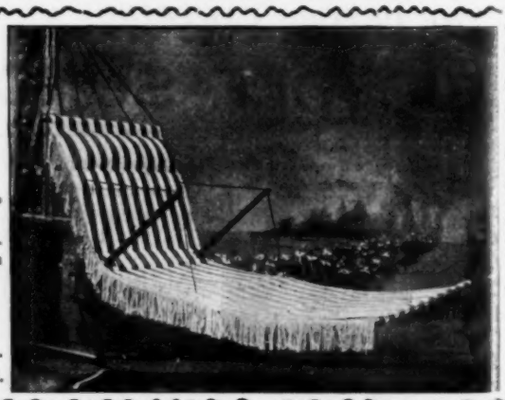

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With each returning season we show something new and desirable in bicycle construction.

This season finds us with more good things than ever.

One of these good things is the *Burwell Ball and Roller Bearing.*

Examine the illustration—notice particularly that the little steel roller between the balls transfers the motion without interruption and the balls cannot grind together as in ordinary bearings.

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Are tested in every detail before being placed on the market.

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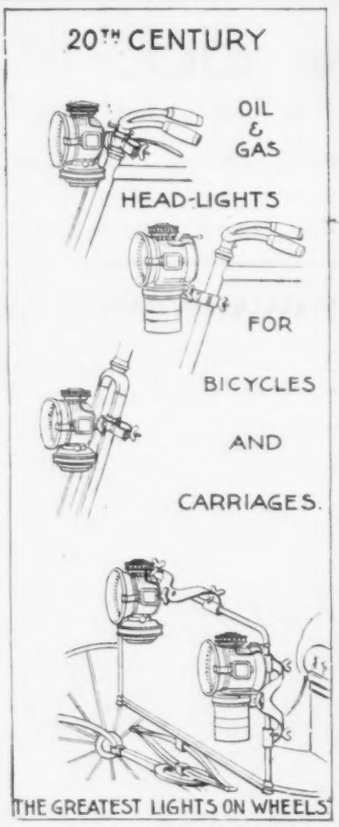

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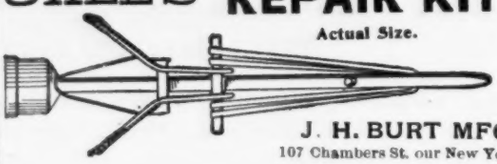
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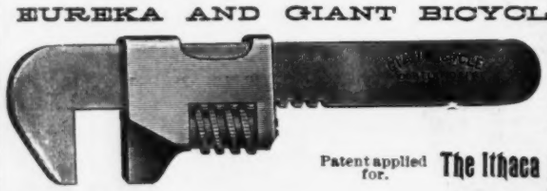

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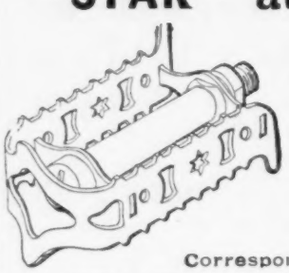

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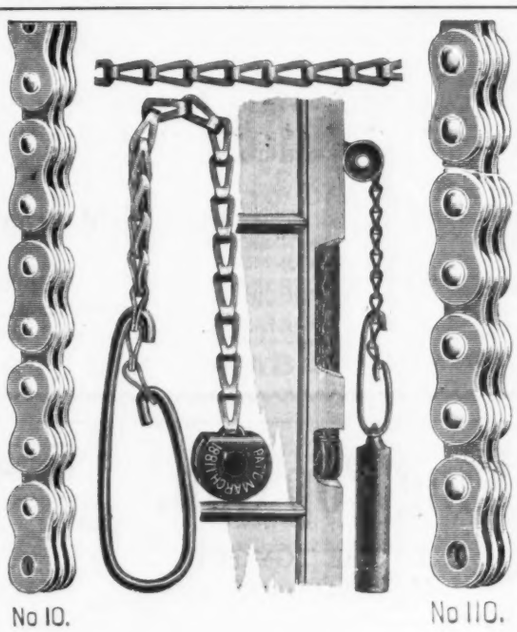

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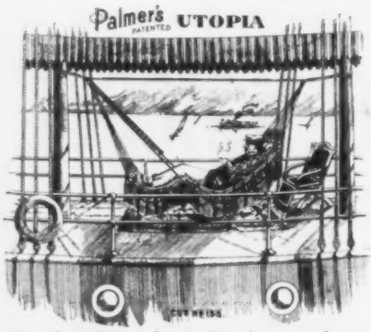

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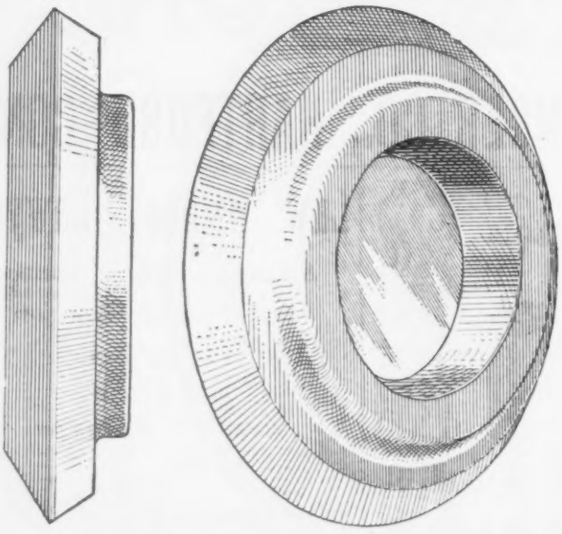

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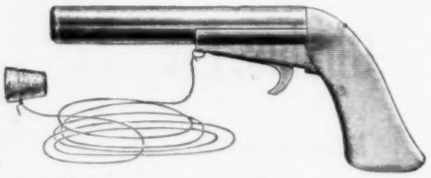

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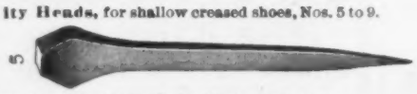

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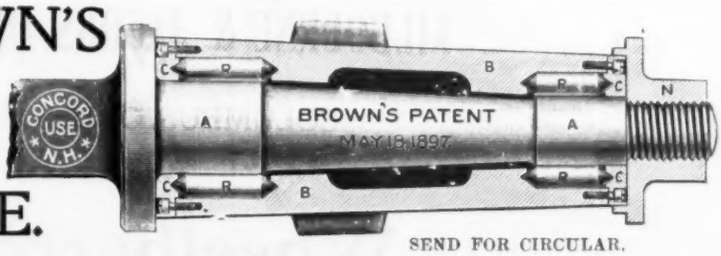

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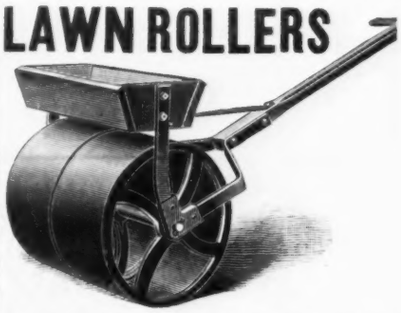

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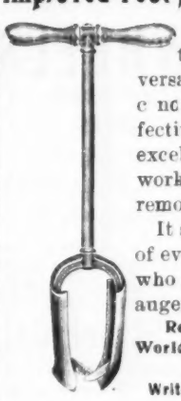

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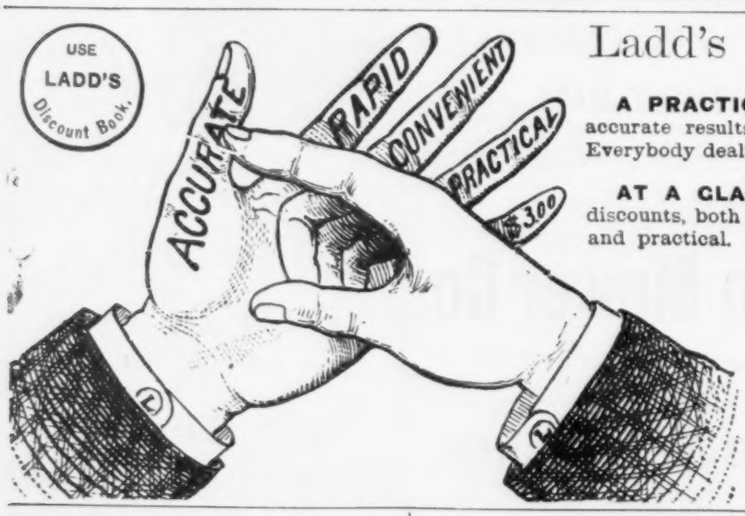

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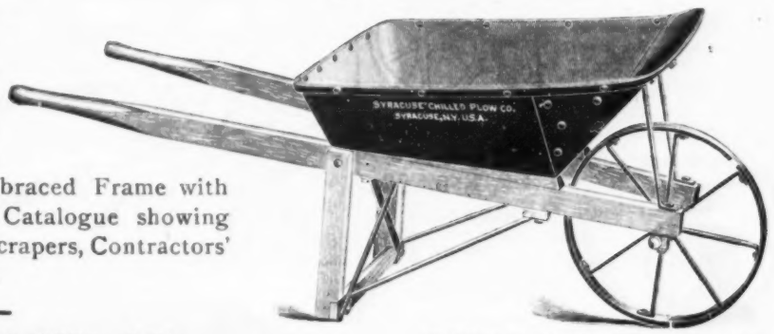

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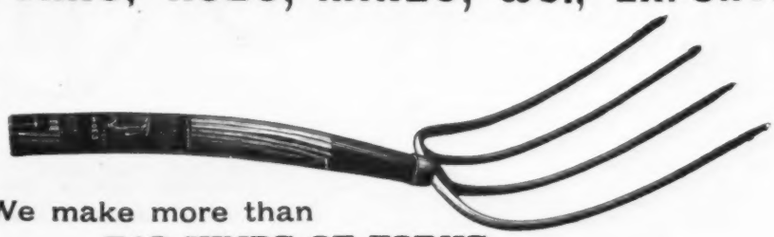

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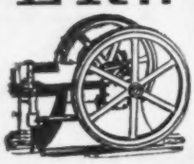

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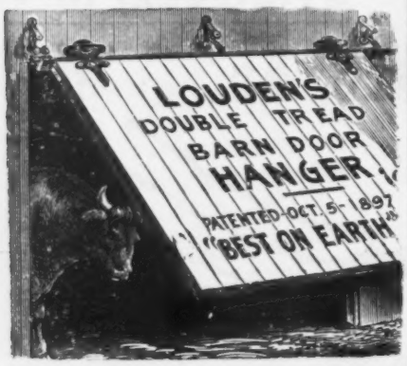

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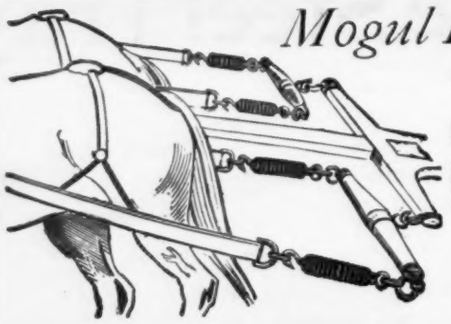

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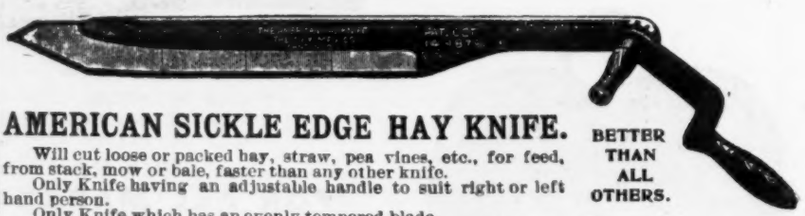

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Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
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Norwalk Iron Works, S. Norwalk, Ct.
Rand Drill Co., 100 Broadway, N. Y.

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Markham Air Rifle Co., Plymouth, Mich.

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Tucker & Dorsey Mfg. Co., Indianapolis

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Standard Smelting Wks., 389 Canal St.

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Boxes, Hdw. Shelf. &c.
Green, A. H. & Co., 22 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va.

Brackets, Shelf.
Atlas Mfg. Co., New Haven, Conn.

Brass and Copper.
Ansonia Brass & Copper Co., N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Davol, John & Sons, 100 John, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Hussey, C. G. & Co., Pittsburgh, Pa.
Plume & Atwood Mfg. Co., 29 Murray St., N. Y.
Randolph & Clowes, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Copper Wire.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Butt Hinges.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Tiebout, W. & J., 16 & 18 Chambers.

Brass Butts.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Founders.
Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co. Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

Brass Goods.
Brass Goods Mfg Co., 88 Chambers.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
Hungerford U. T., Brass & Copper Co., 121 Worth St., N. Y.

Breast Drills.
Fray, Jno. S. & Co., Bridgeport, Conn.

Bridge Builders.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.

Bronze, Manganese.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze (Tobin).
Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y

Brushes and Brooms.
Hendee Wire Brush Co., Milwaukee, Wis
Osborn Mfg. Co., Cleveland, O.

Buckets, Rubber.
Cleveland Galvanizing Wks., Cleveland

Buggies.
Parry Mfg. Co., Indianapolis, Ind.

Builders' Hardware.
Mallory Wheeler Co., New Haven Conn.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York.
Stanley Works, New Britain, Conn.

Bulldozers
Williams, White & Co., Moline, Ill

Burnt Leather.
Ensworth, L. L. & Son, Hartford, Conn.

Butchers' Tools.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Chicago Wheel & Mfg. Co., Chicago, Ill.
Goodell Co., Antrim, N. H.
Hoffman, C. & A., Phila., Pa.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Camp Stools.
Ely, Theo. J. Mfg. Co., Girard, Pa.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carpet Beaters.
Ely, Theo. J. Mfg. Co. Girard, Pa.

Carriage Hardware.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hartley & Graham, 313 & 315 Broadway, New York.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Casters.
Standard Caster & Wheel Co., 316-326 E. 23d St., N. Y.
Tucker & Dorsey Mfg. Co., Indianapolis.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1-31 Broadway, N. Y
Enterprise Foundry Co., Cincinnati, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McLain, J. H. Co. Canton, O.
McNeal Pipe & Foundry Co., Philadelphia, Pa.
Martin, Wm. R., Lancaster, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

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Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cement Workers' Tools.
Ideal Tool Co., Indianapolis, Ind.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth st., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Schmidt, Jno. C. & Co., York, Pa.
Turner & Seymour Mfg. Co., Torrington, Conn.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hodgson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. H. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Cornice Brakes.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.
Bertsch & Co., Cambridge City, Ind.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.
Railway Supply Co., St. Louis, Mo.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countersinks.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Bennett Geo. B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crayons, Foundry.
Virginia Soapstone Slate Pencil Co., Charlotteville, Va.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
New York Stamping Co., Brooklyn, N. Y.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Illinois Cutlery Co., Decatur, Ill.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Hay-Budden Mfg Co., Brooklyn, N. Y.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., Brklyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg Co. Cleveland, O.

Dog Collars.
Union Hardware Co., Torrington, Conn.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Larimer Mfg. Co., Pittsburg, Pa.
Norton Door Check & Spring Co., Boston.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass
Wilson Mfg. Co., 149 Cedar St., N. Y.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Grant Mch. Tool Works, Cleveland, O.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.

Drilling Machines, Automatic.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Gould & Eberhardt, Newark, N. J.

Dripping Pans.
Piligrove Bros. & Co., Toledo, O.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. H. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia, R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Williams, White & Co., Moline, Ill.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor Conn.
General Electric Co., Schenectady, N. Y.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Heaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass

Electrical Repairing.
Cleveland Armature Works, Cleveland, Ohio.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Philadelphia, Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G. Reading Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamont, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass
New Castle Engineering Works, Pittsburgh, Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Lambert Gas & Gasoline Engine Co., Indianapolis, Ind.
New Era Iron Works, Dayton, Ohio.
Palmer, Bros. Mianus, Conn.
Thompson, T. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Westinghouse Machine Co., Pittsburgh, Pa.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Bay State Iron Works, Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Lane & Bodley Co., Cincinnati, O.
Bennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Toledo Machine & Tool Co., Toledo, O.
Toledo Machine & Tool Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engine and Boiler Supplies.
Sherwood Mfg. Co., Buffalo, N. Y.

Engravers.
Mugford, A., Hartford, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exterminators, Insect.
Smith, D. E. & Co., Utica, N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets.
Litchfield, J. M. Brooklyn, N. Y.
McKenna, A. & T., Pittsburgh, Pa.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Barrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fence Ratchets
Bowen Cable Stay Fence Co., Norwalk, O

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

File Cutting Machines.
Hess Machine Works, Phila., Penna.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co. Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Philadelphia, Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Sherwood Mfg. Co., Buffalo, N. Y

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Forge Co., Lansingburgh, N. Y.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Ely Hoe & Fork Co., St. Johnsbury, Vt.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Rakes.
Koehler, F. E. & Co., Canton, Ohio.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co. Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Bultman, F. H. & Co., Cleveland, O.
Clough, R. M. Tolland Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

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Glass Cutting Boards.
Lufkin Rule Co., Saginaw, Mich.

Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Standard Machine Co., Holyoke, Mass.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.
Union Hardware Co., Torrington, Conn.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.
Robertson, A. R., Boston Mass.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn.

Hand Milling Machines.
Costlio, J. E. Machine Works, Brooklyn, N. Y.

Hangers, Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co., Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.

Hangers; Storm Window and Screen.
Phœnix Mfg. Co., Milwaukee, Wis

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Parker, Cons. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Russell & Erwin Mfg. Co., New York.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mirs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Ely, Theo. J. Mfg. Co., Girard Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
Kobler, F. E. & Co., Canton, Ohio.
New Britain Hdw. Mfg. Co., New Britain.
North Bros. Mfg. Co., Philadelphia, Pa.
Parks & Parks, Troy, N. Y.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ely, Theo. J. Mfg Co., Girard, Pa.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Dunn, Jas. P., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rome Mfg. Co., Rome, N. Y

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoenweerg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Household Specialties.
Parks & Parks, Troy, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Graham, John H. & Co., 113 Chambers St., N. Y.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Kynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Luckenbach, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron. *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.

Jewelry.
Myers, S. F. Co., 48-50 Maiden Lane, N. Y.

Job Lots, Hardware.
Chicago House Wrecking Co., Chicago, Ill.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Grant Mch. Tool Works, Cleveland, O.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros. Mfg. Co., Mianus, Conn.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio.
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Logan & Strobridge Iron Co., New Brighton, Pa.
Tucker & Dorsey Mfg. Co., Indianapolis.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Mallory Wheeler Co., New Haven, Conn.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Farrel Foury & Mch. Co., Ansonia, Conn.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass.
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
King & Walker Co., Madison, Wis.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Pouliterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Rudolphi & Krummel, Chicago, Ill.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Man Hole Forming Tools.
Haworth Mfg. Co., Liberty, Ind.

Manufacturing Properties.
Hilliman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milk Cans.
Shepard, Sidney & Co., Buffalo, N. Y.

Milling Attachment for Lathes.
Adison Mfg. Co., Phila., Pa.

Milling Machines.
Adams Co., Dubuque Iowa.
Becker, John, Mfg. Co., Fitchburg Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Grant Mch. Tool Works, Cleveland, O.
Lucas & Gallem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.

Molding Machines.
Pridmore, Henry E., Chicago, Ill.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Atherton, Jesse, Auburn, R. I.
Bates Machine Co., Joliet, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Maltby-Henley Co., 20 Warren St., N. Y.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J
Zucker & L. vitt & Loeb Co., 526-530 W. 25th St., N. Y.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

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Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Padlocks.
Mallory Wheeler Co., New Haven, Conn.
Russell & Erwin Mfg. Co., New York.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Walter & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Erdle & Schenck, Rochester, N. Y.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Haik & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Forceps.
Reimers, J. N. & Co., Davenport, Iowa.

Pig Iron.
Hickman, Williams & Co., Chicago, Ill.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pincers.
Washington Tool Co., Owatonna, Minn.

Pipe, Bent.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N.Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore,
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Myers, S. F. Co., 48-50 Maiden Lane, N. Y.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Plyers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scholl horn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Pokes.
Ely, Theo. J. Mfg. Co., Girard, Pa.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Post Hole Diggers.
Iwan Bros., Streator, Ill.

Poultry Fencing.
De Kalb Fence Co., De Kalb, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland,
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati, O

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Rudolphi & Krummel, Chicago, Ill.
Woolley Fdry. & Mch. Works, Anderson Ind.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T Mfg. Co., Hamden, Conn
Smith, Seymour & Son Oakville, Conn.

Pruning Shears.
Smith, Seymour & Son, Oakville, Conn.

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Freshour, T. C., Chicago, Ill.

Pump Chains.
Cleveland Galvanizing Wks., Cleveland.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Flier & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphreys Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Meyers, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
King & Walker Co., Madison, Wis.
Long & Allstatter Co., Hamilton, Ohio.
Merrick, C. S. & Co., New Haven Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Razor Strops.
Razorine Mfg Co., 134 Pearl St., N. Y.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg Co., Fond du Lac, Wis
Gurney Refrigerator Co., Fond du Lac, Wis.
Mackinaw Refrigerator Co., 106 Chambers St., N. Y.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N.Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham, 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Osgew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.
Wilder, J. K. & Sons, Monroe, Mich.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia Conn
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Lufkin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Foster, H. H., Canot, Vt
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Logan & Stroudsburg Iron Co., New Brighton, Pa.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.
Enterprise Foundry Co., Cincinnati, O.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Kent, F. E. & Co., Canton, O
Morrill, Chas., 35 Warren St., N. Y.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Saw Vises.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scales.
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Parry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Phillips, A. J. Co., Fenton, Mich.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Gay & Parsons, Augusta, Me.
Goodell Bros. Co., Greenfield, Mass.
New England Specialty Co., No. Easton Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Chicago Wheel & Mfg. Co., Chicago, Ill.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Seliers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Tool Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbrandt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

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Shelving.
Warren, J. D. Mfg. Co., Chicago, Ill.

Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sickle Grinder.
Chicago Wheel & Mfg. Co., Chicago, Ill.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Sauces, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Union Hardware Co., Torrington, Conn
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners.
Union Hardware Co., Torrington, Conn.

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.
Tucker & Dorsey Mfg. Co., Indianapolis Ind.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Snow Shovels.
Phillips, A. J. Co., Fenton, Mich.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Markle Lead Work , St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T., Brass & Copper Co., 121 Worth st., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soles.
Baxter, Schenkelberger & Co., Boston, Mass.

Spark Coils.
Varley Duplex Magnet Co., Jersey City, N. J.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N.Y

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Knip, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth st , N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co , Cleveland, O.
Dunbar Bros., Bristol, Conn.
Lord Bros Mfg Co , Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Hoffman Hinge Co., Cleveland, Ohio.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N. Y.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
D'Este & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
D'Este & Seeley Co., Boston, Mass.
Dunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.
Bennett, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
D'Este & Seeley Co., Boston, Mass.
Lynon-Evans Mfg Co., Philadelphia, Pa.

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, R. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport.

Manufacturers' Agents.
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 39 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, R. M. Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Mitbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Card, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Stokers.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Cleveland, O.
Warren, J. D. Mfg Co., Chicago, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stove Trucks.
Tucker & Dorsey Mfg Co., Indianapolis, Ind.

Stoves, Oil, Vapor & Gasoline.
Dangler Stove & Mfg Co , Cleveland, O
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tack Claws.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Shelton Co., Birmingham, Conn.
Stanley, G. W. Co. Bridgeville, Ill.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Mass.
Sweetser, W. A., Brockton, Mass.

Tapes.
Lufkin Rule Co , Saginaw, Mich.

Tap Holder.
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Pesly, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
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Rome Mfg. Co., Rome, N. Y.

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Lloyd Booth Co., Youngstown, O.

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Tower & Lyon, 95 Chambers St., N. Y.
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Wiley & Russell Mfg., Co., Greenfield Mass

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Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

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Phœnix Tube Co., Brooklyn N. Y.

Tubing, Steel.
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National Tube Wks. Co., McKeesport, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
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Henderson Bros., Waterbury, Conn.

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Cleveland City Forge & Iron Co., Cleveland, O.

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Morse Twist Drill & Machine Co., New Bedford, Mass.
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Standard Tool Co., Cleveland.

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Chapman Valve Mfg. Co., Boston.
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Lunkenheimer Co., Cincinnati, O.
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American Blower Co., Detroit, Mich.
Sayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

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Athol Machine Co , Athol, Mass.
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Bonney Vise & Tool Wks., Phila., Pa.
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Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Tower & Lyon, 95 Chambers St., N. Y
Utica Drop Forge & Tool Co., Utica, N. Y.

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Covert's Saddlery Works, Farmer, N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn

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Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson & Smith, Worcester, Mass.

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Poole, Robt. & Son Co., Baltimore, Md.

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Iwan Bros., Streator, Ill.

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Syracuse Chilled Plow Co., Syracuse, N. Y.

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Arnold Metal Wheel Co., New London, O.

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Flint & Walling Co., Kendallville, Ind.

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Samson Cordage Works, Boston, Mass.

Window Fasteners.
Stanley Works, New Britain, Conn.

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New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
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Stewart Wire Co., Easton, Pa.
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Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

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Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
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Clinton Wire Cloth Co., Clinton, Mass.
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Estey Wire Works Co., 65 Fulton, N. Y.
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Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
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Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.
Morrill, Chas., 35 Warren St., N. Y.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

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Mossberg & Granville Mfg. Co., Providence, R. I.

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Hendee Wire Brush Co , Milwaukee, Wis.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

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American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
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Nilson, A. H. Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.
Rudolphi & Krummel, Chicago, Ill.
Shuster, F. B. Co., New Haven, Conn.

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U. S. Wire Mat Co., Decatur, Ill.

Wire Nails.
American Steel & Wire Co , Chicago, Ill.
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Pittsburgh Wire Co., Pittsburgh, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton.
Whitney, A. R. & Co., 29 Broadway, N. Y.

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Alexander & McLaughlin, Erie, Pa.
Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

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American Steel & Wire Co., Chicago, Ill.
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Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

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Broderick & Bascom Rope Co., St. Louis.
Hazard Mfg. Co., Wilkesbarre, Pa
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire, Spool.
Malin & Co., Cleveland, O.

Wire Straightening and Cutting Machinery.
Shuster, F. B. Co., New Haven, Conn.

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Cook, Asa S. & Co., Hartford, Ct.

Wood Working Machinery
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

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Coes Wrench Co., Worcester, Mass.
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Keystone Drop Forge Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Star Mfg. Co., Carpentersville, Ill
Tower & Lyon, 95 Chambers St., N. Y.
Williams, J. H. & Co., Brooklyn, N. Y.

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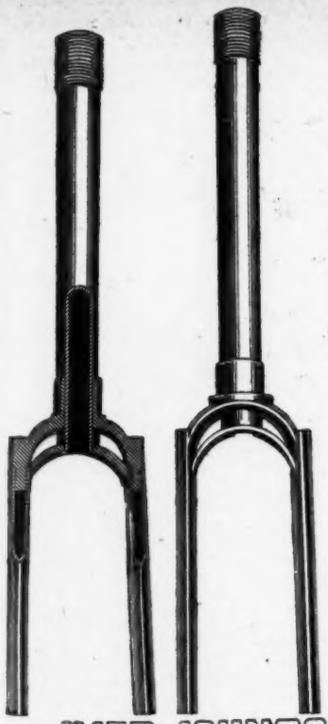

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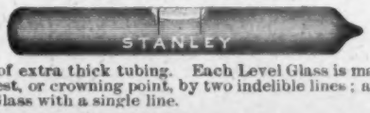

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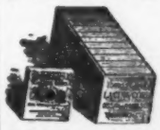

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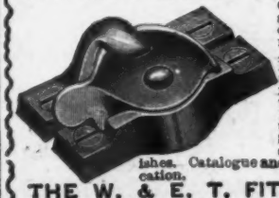

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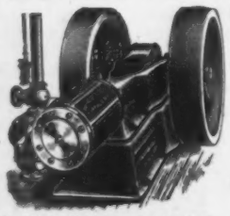
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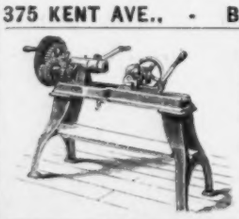
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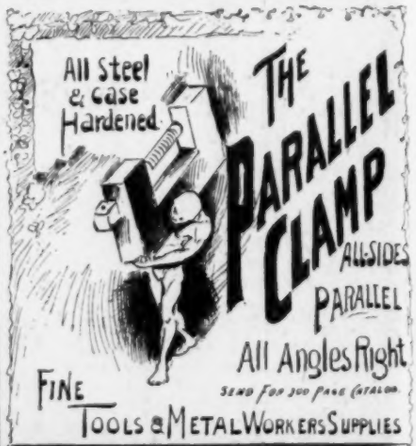

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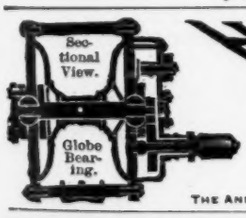

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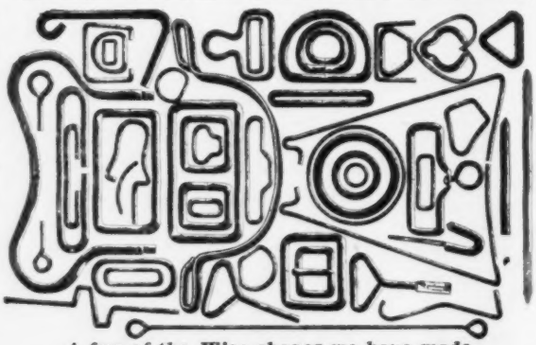

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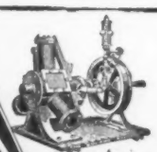

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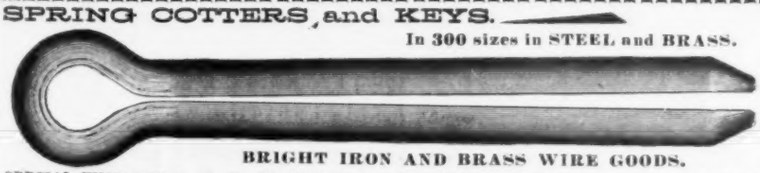
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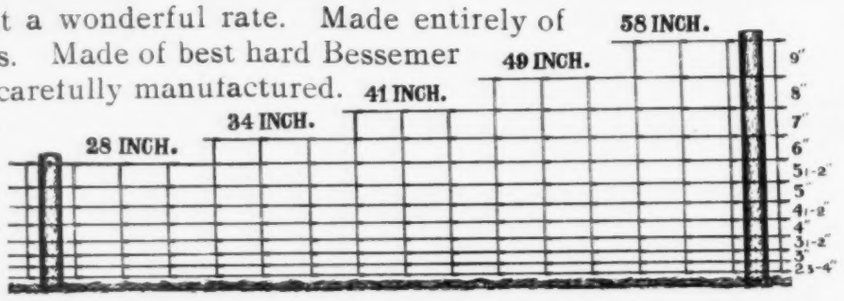

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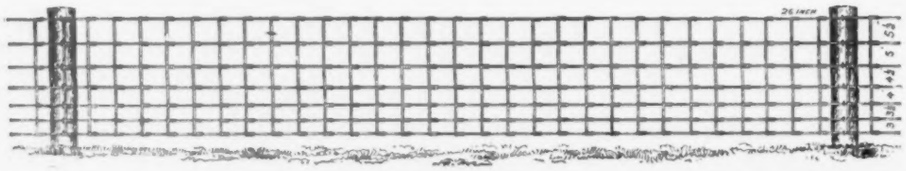

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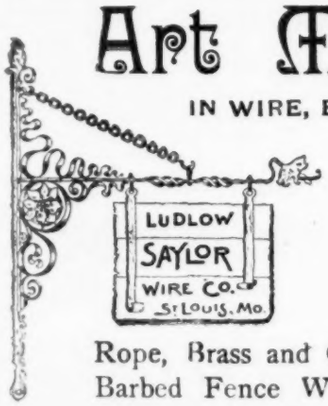

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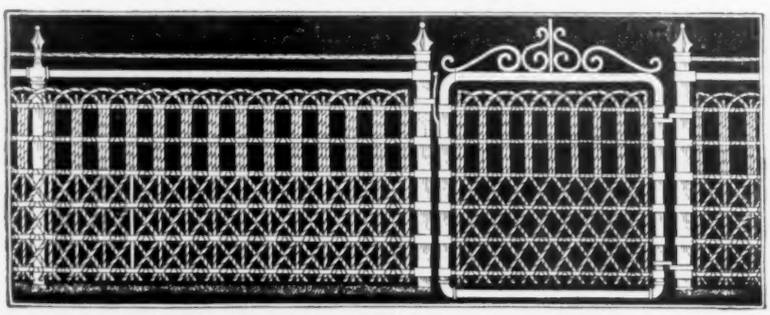

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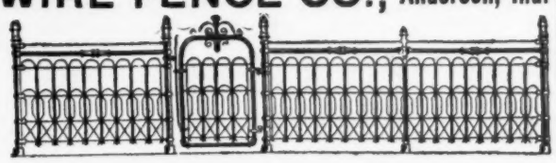

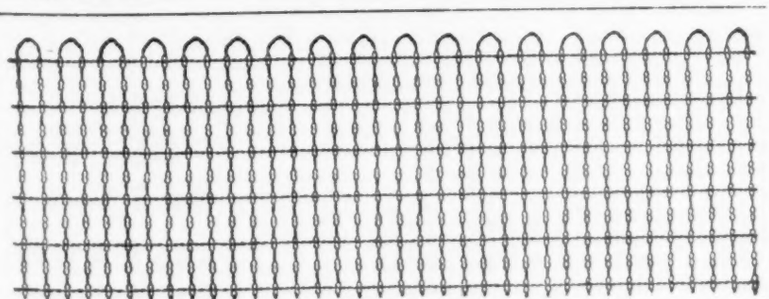

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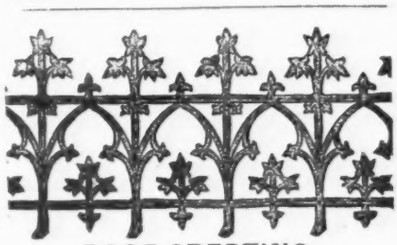

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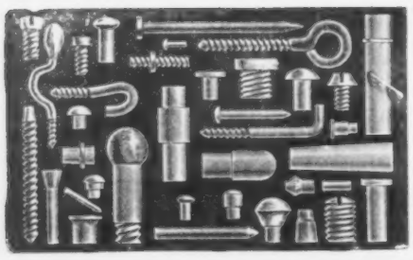

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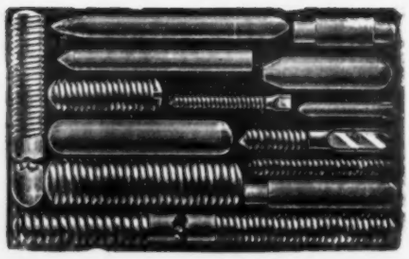

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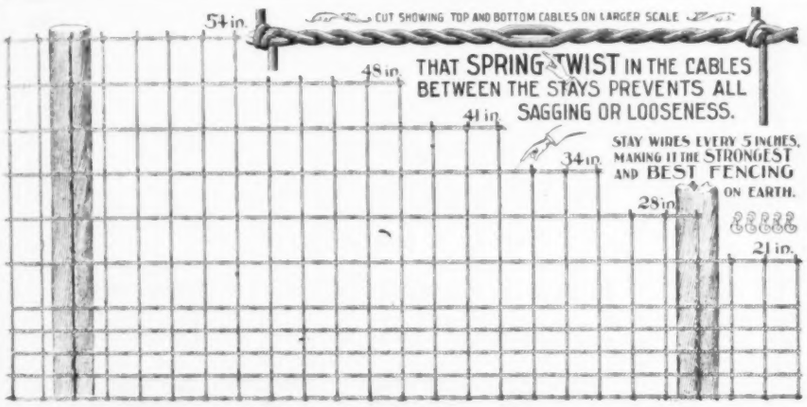

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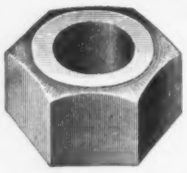

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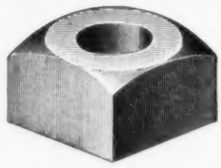

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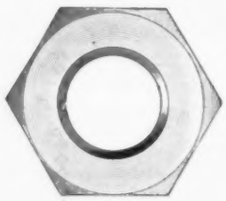

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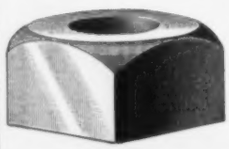

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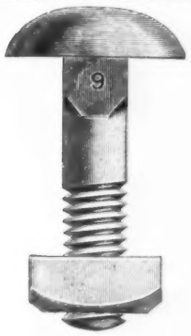

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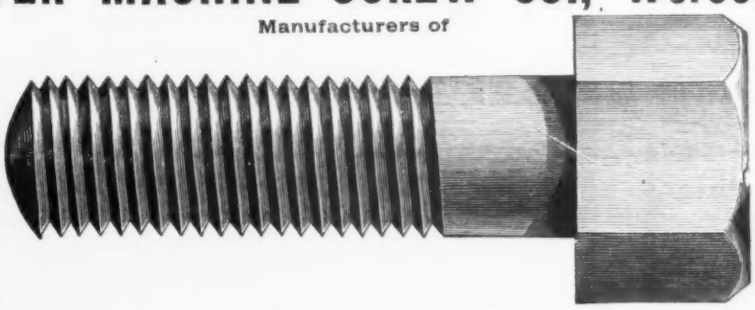

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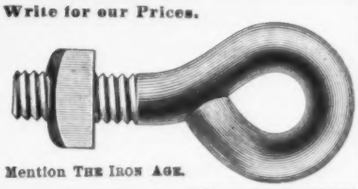

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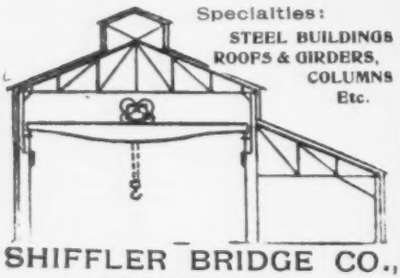

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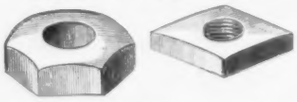

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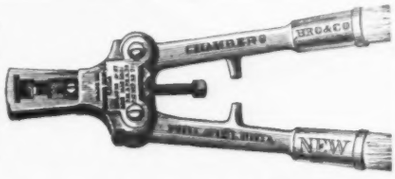

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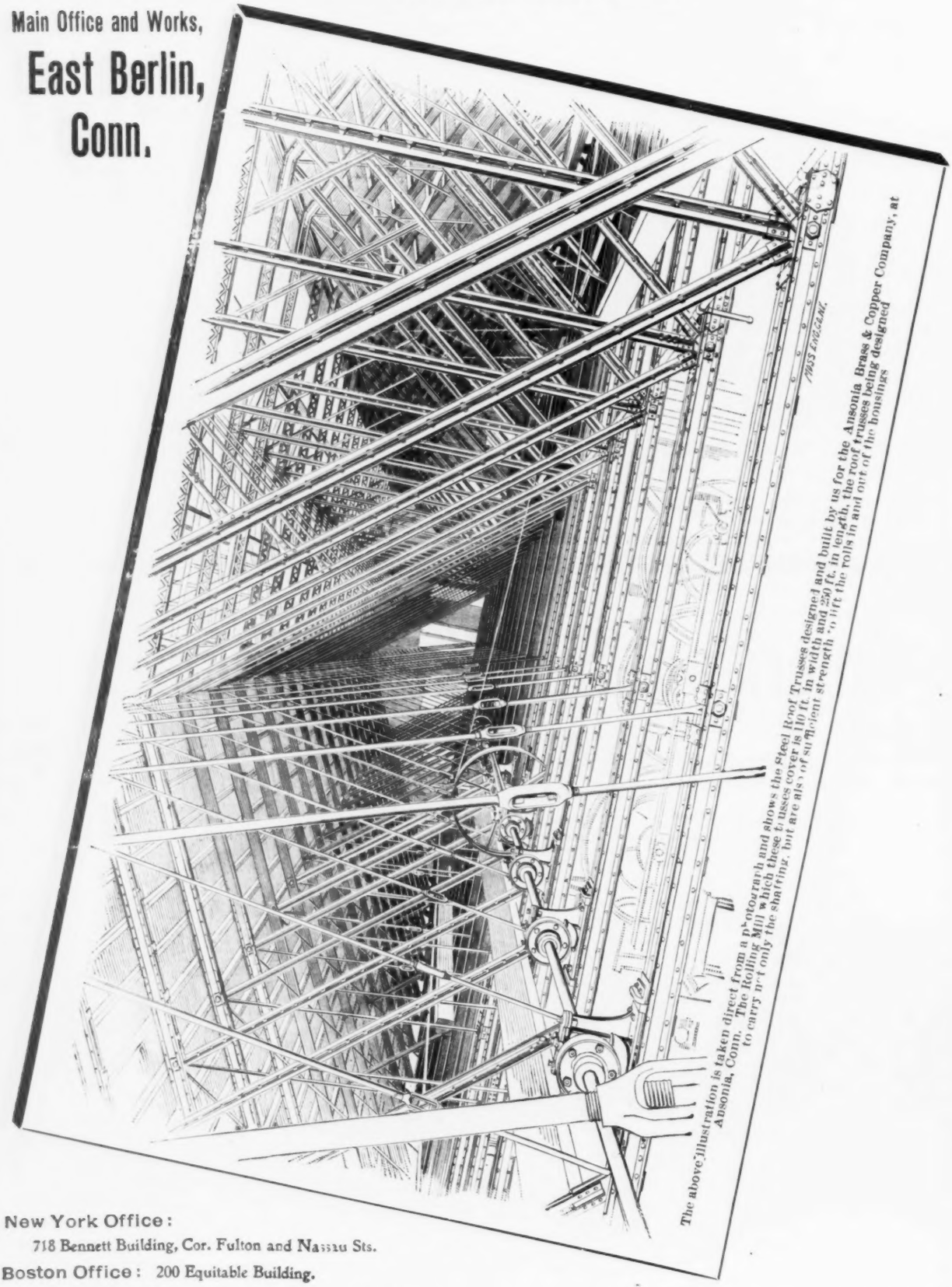

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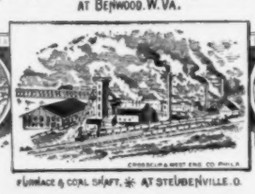
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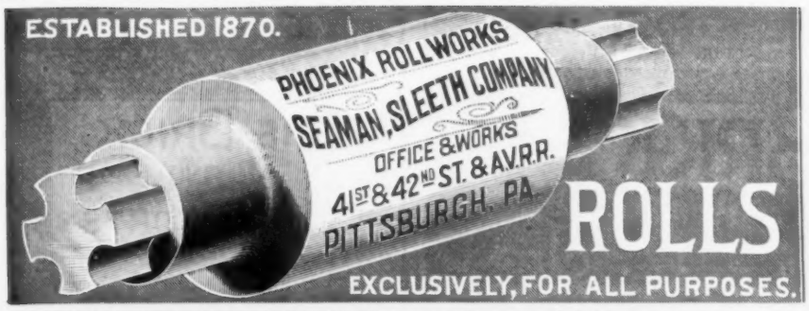

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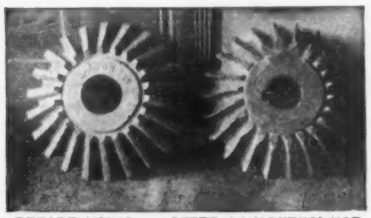

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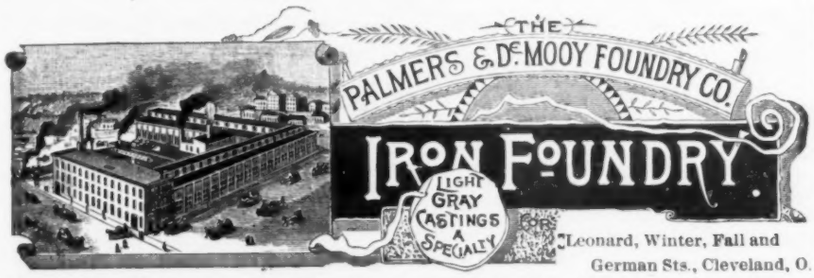

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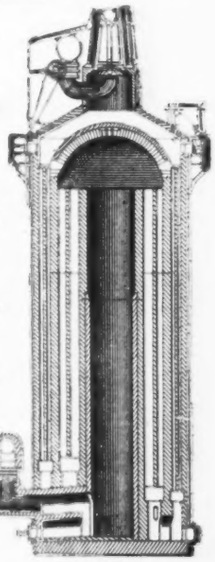

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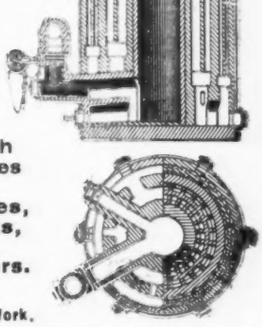

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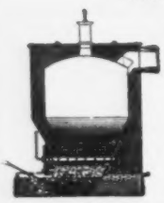

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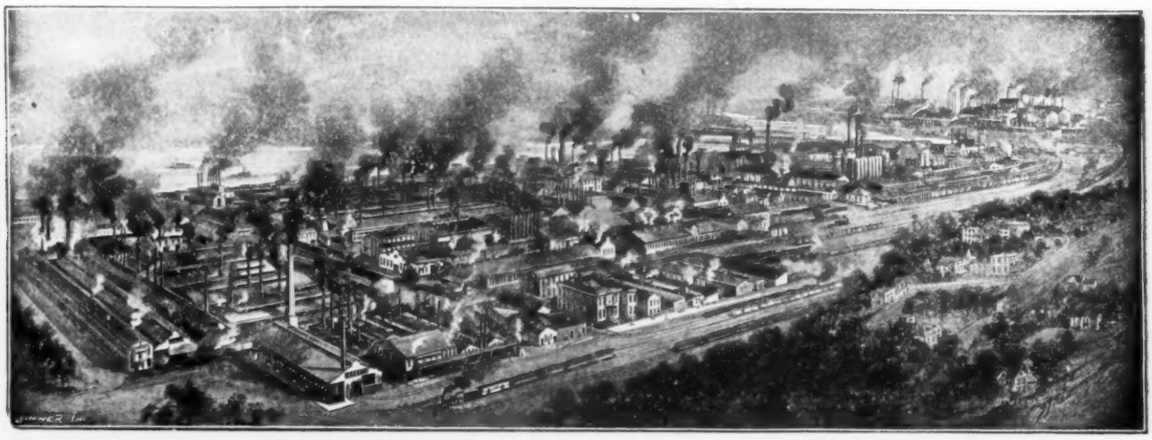

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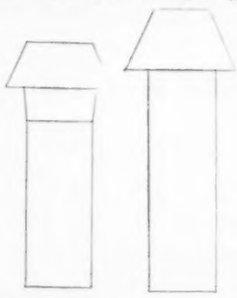

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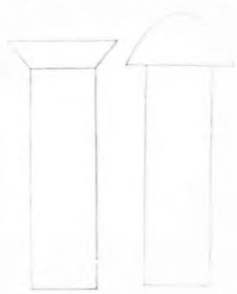

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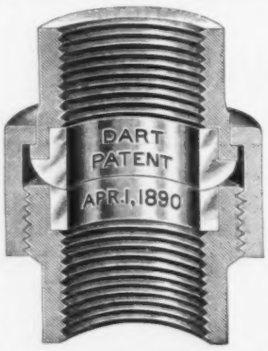

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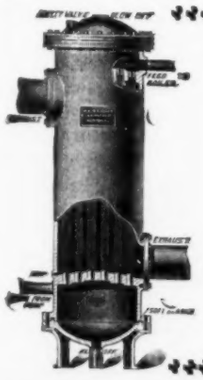

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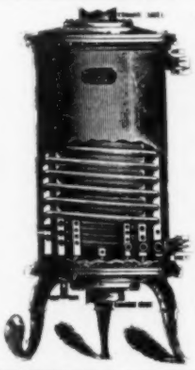

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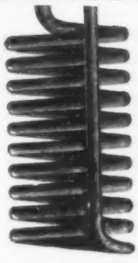

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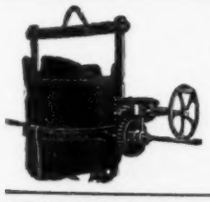

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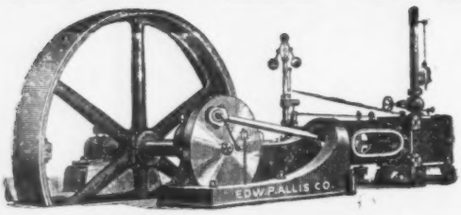

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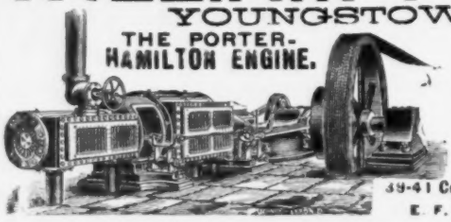

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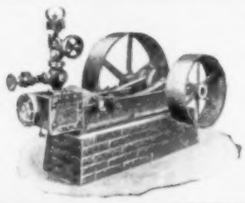

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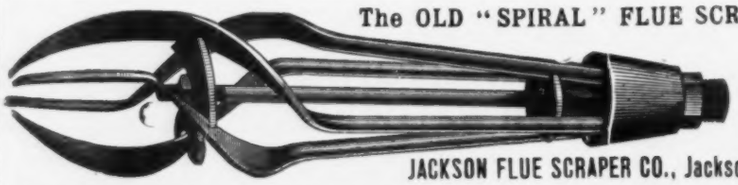

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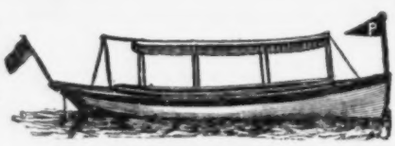

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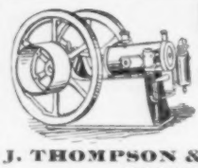

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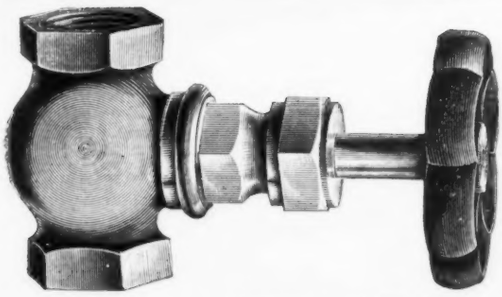

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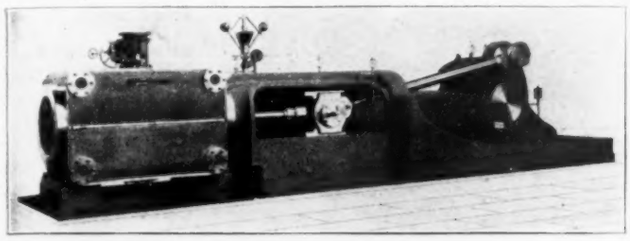

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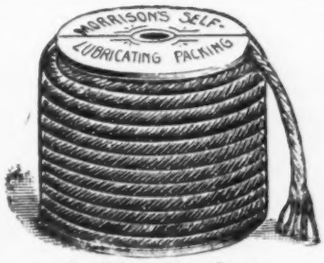

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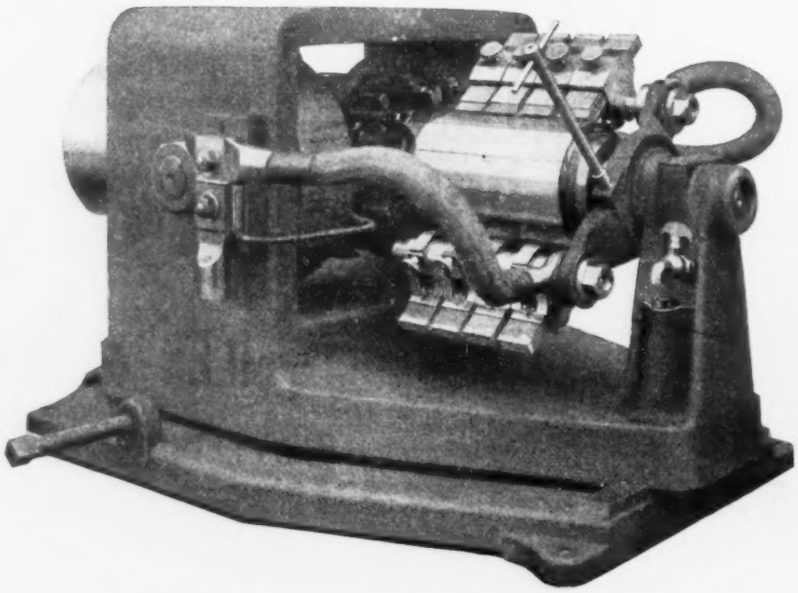

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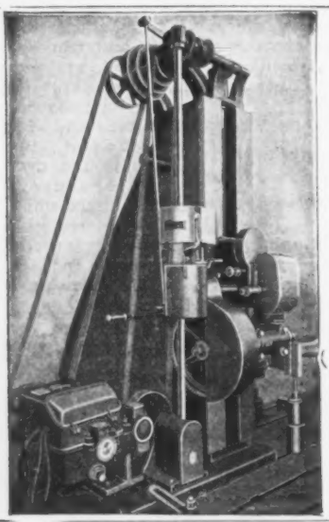

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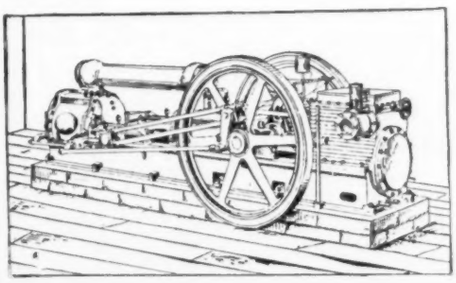

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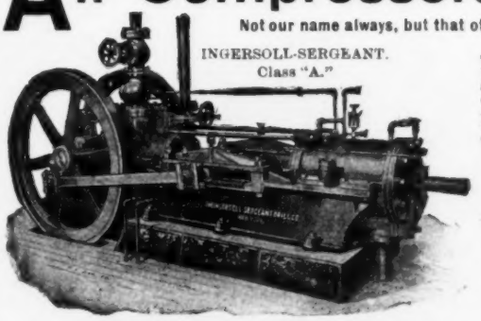

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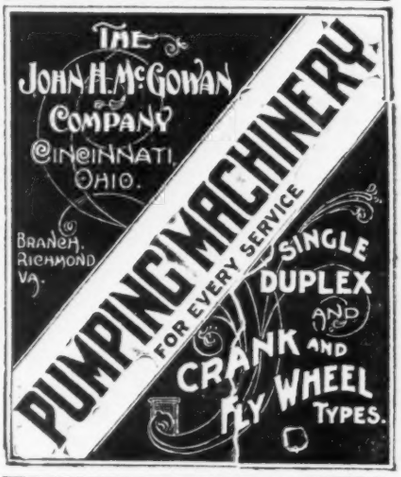

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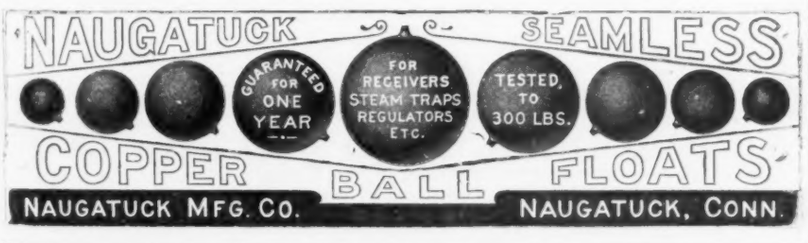

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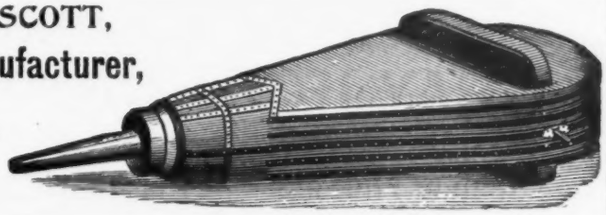

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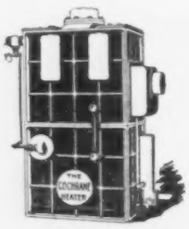

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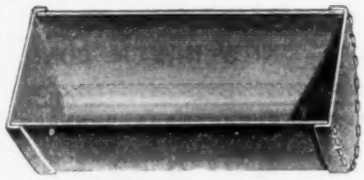

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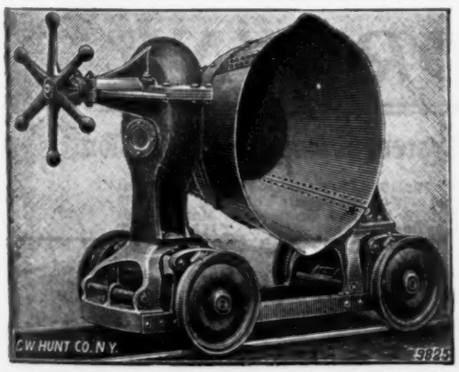

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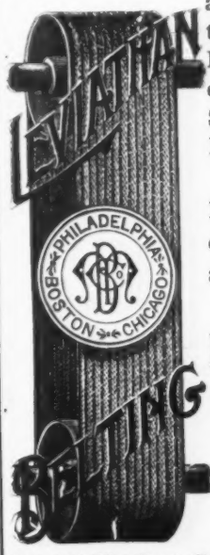

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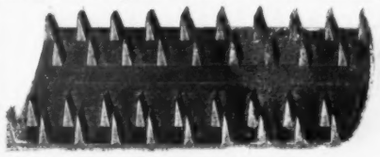

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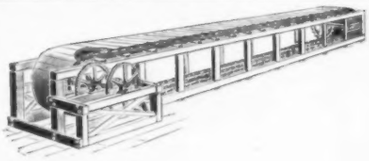

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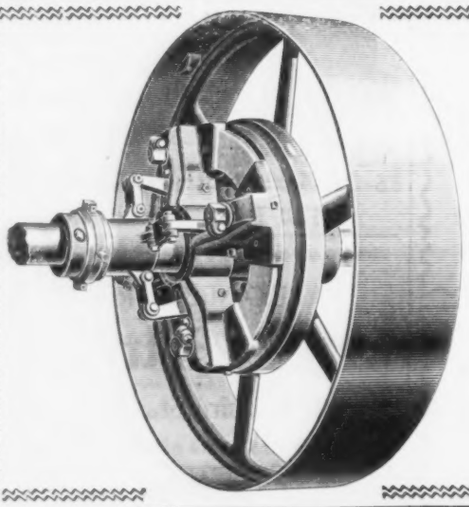

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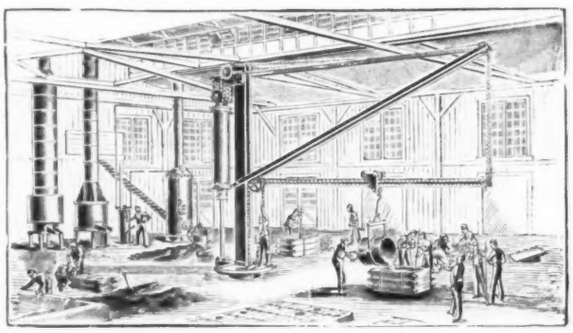

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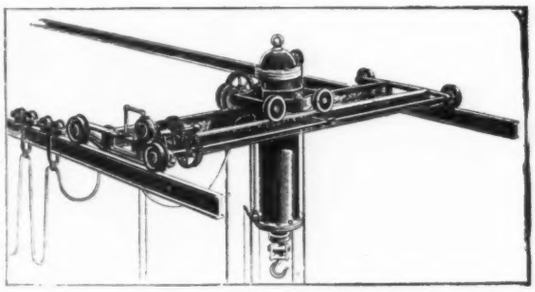

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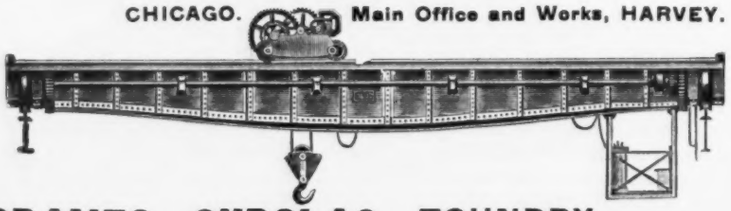

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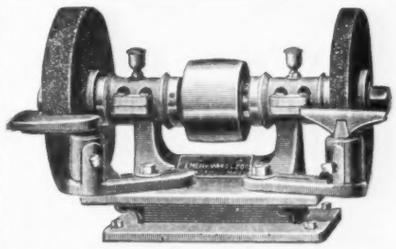

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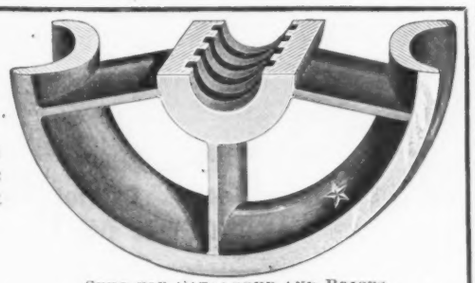

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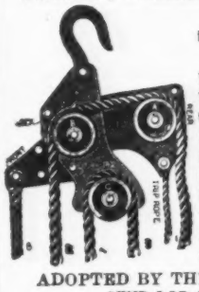

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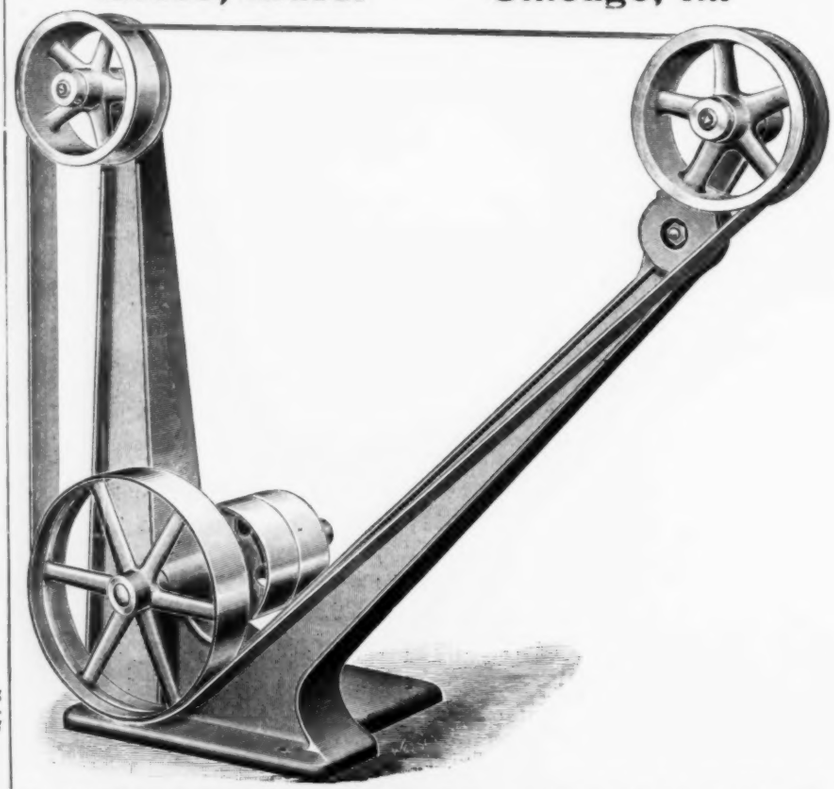

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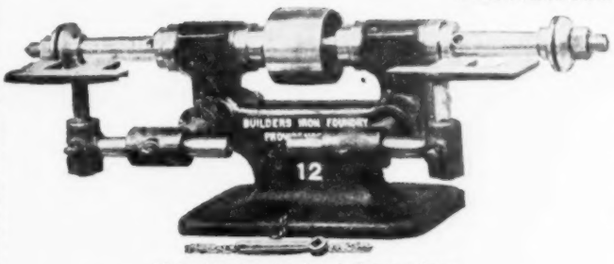

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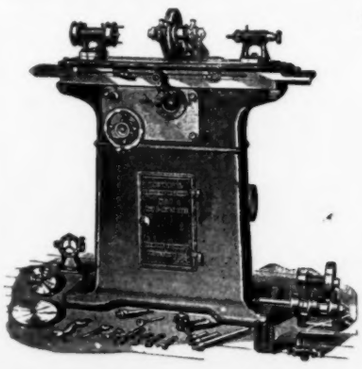

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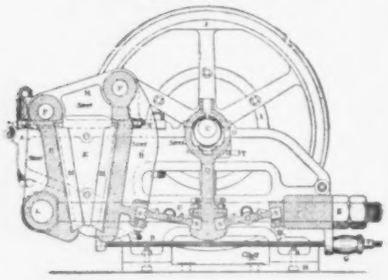

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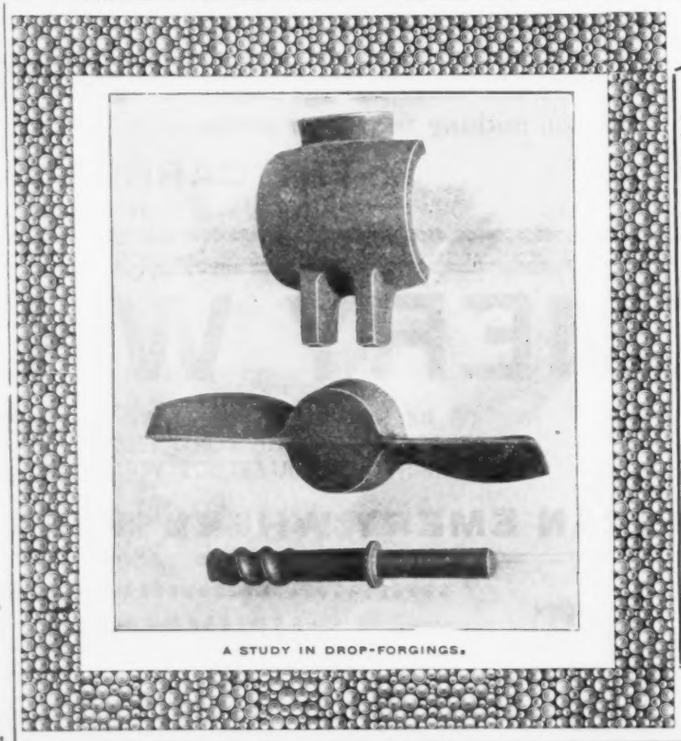

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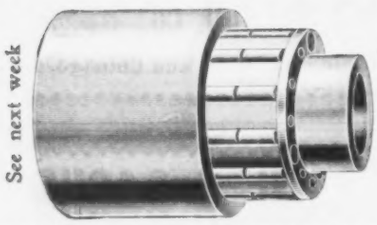

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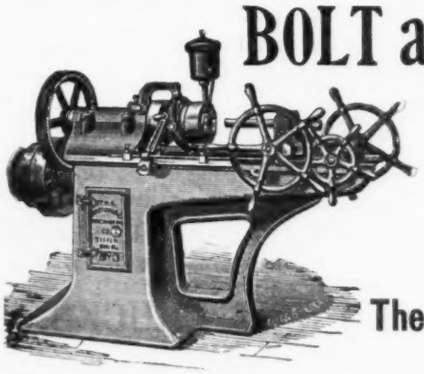

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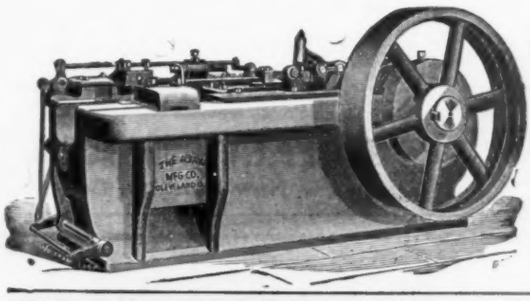

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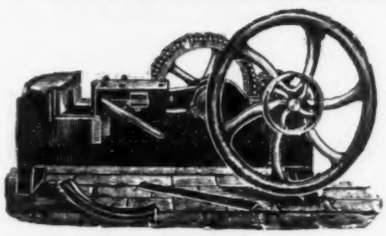

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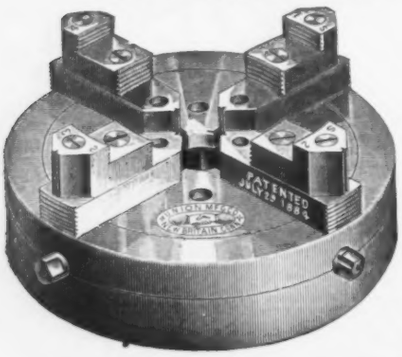

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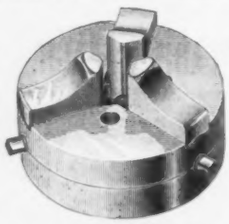

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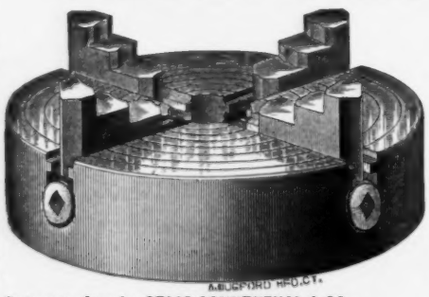

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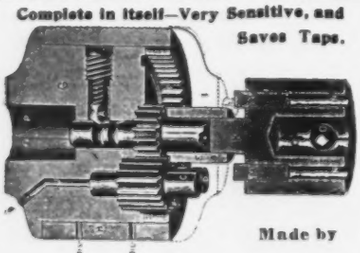

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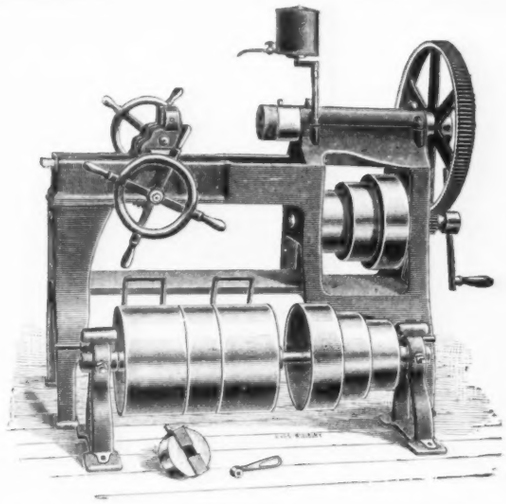

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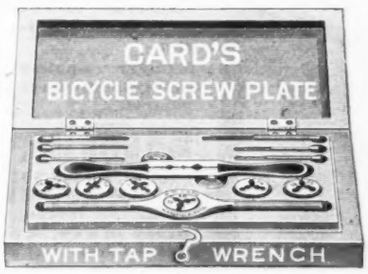

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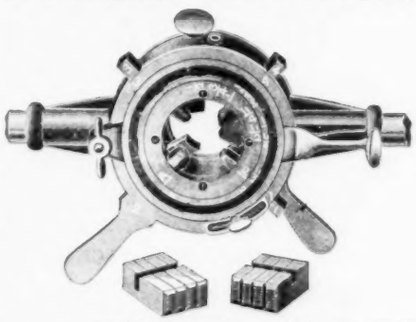

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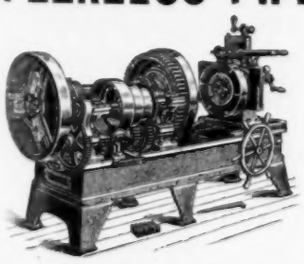

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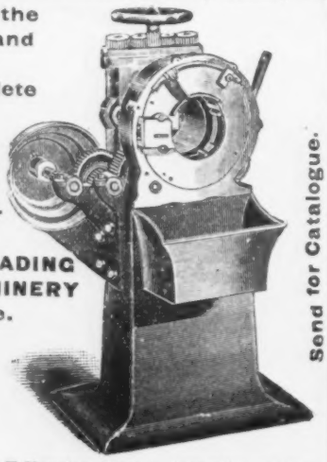

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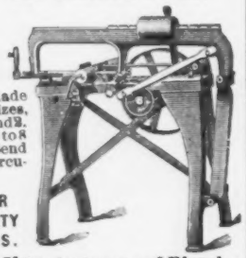

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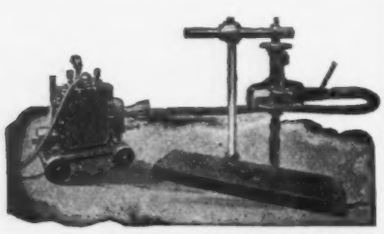

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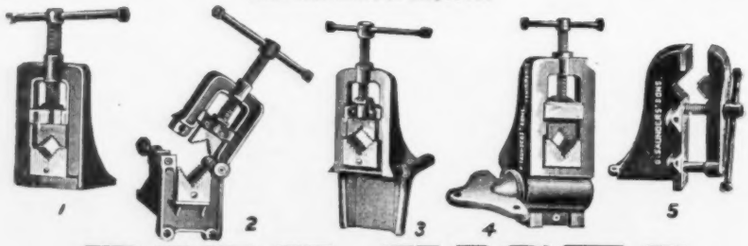

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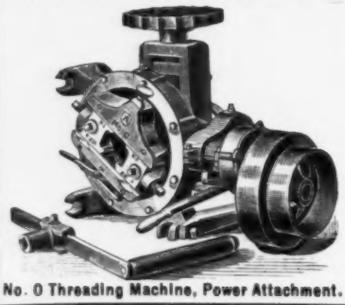

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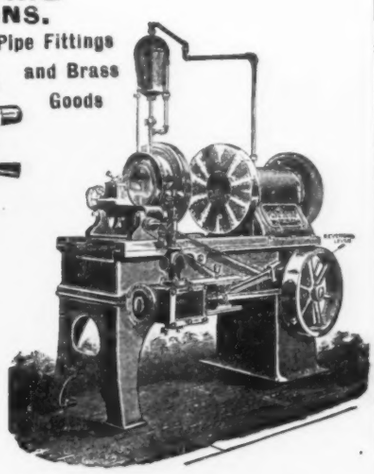

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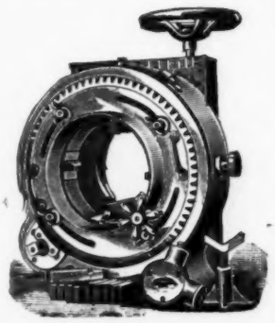

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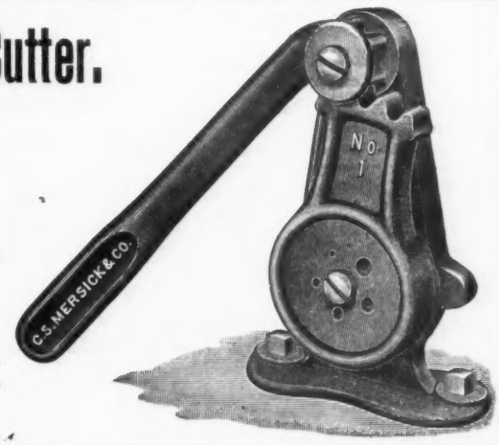

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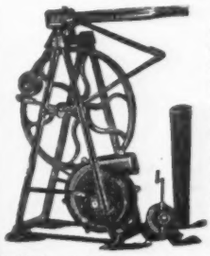

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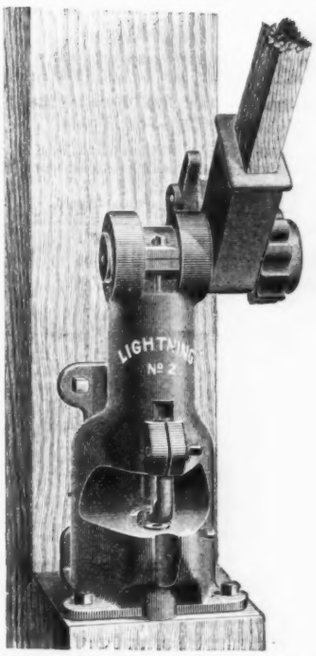

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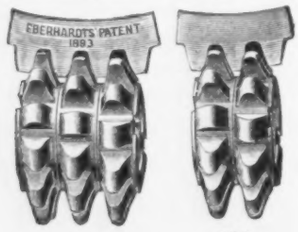

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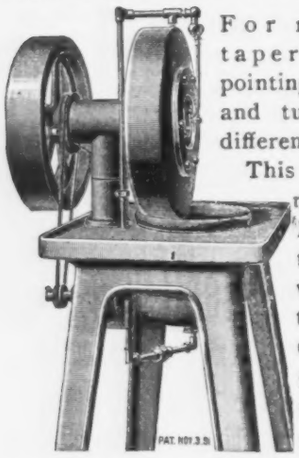

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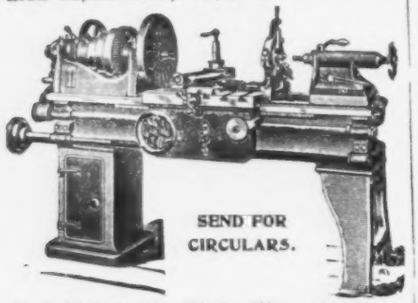

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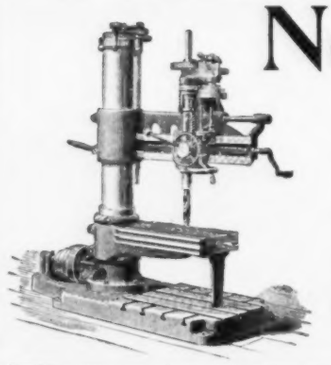

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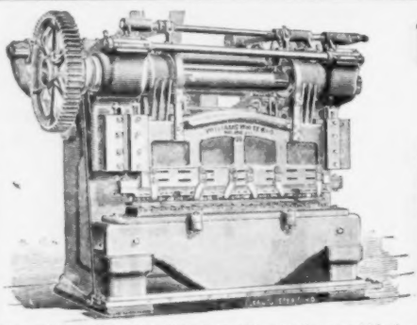

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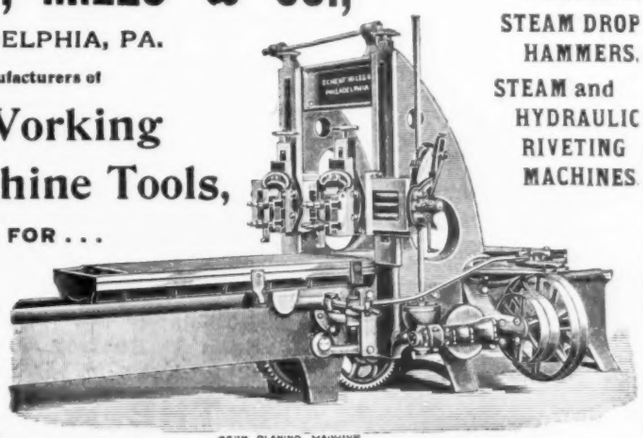

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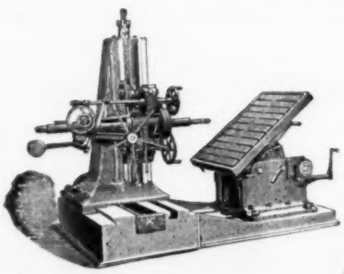

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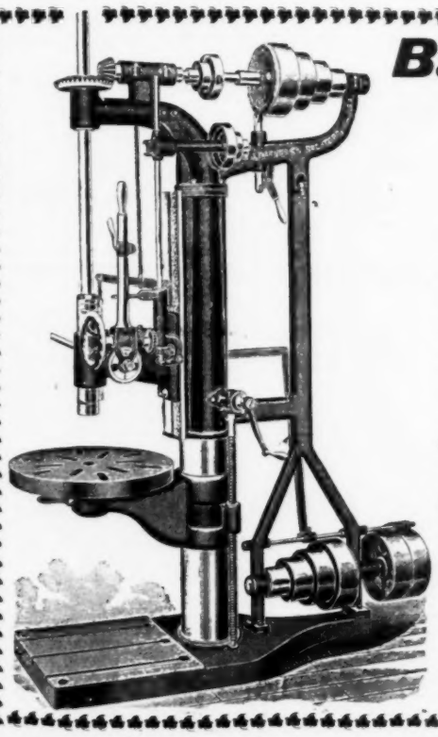

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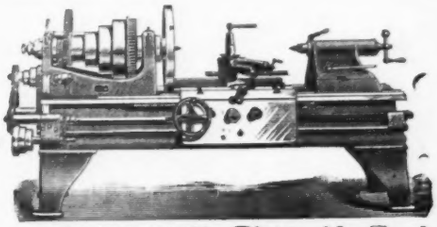

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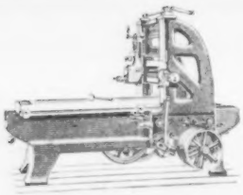

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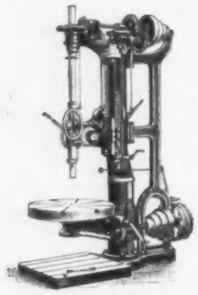

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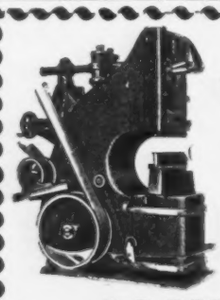

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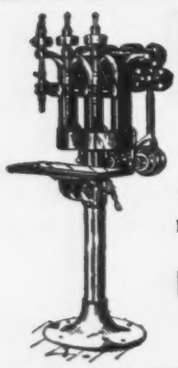

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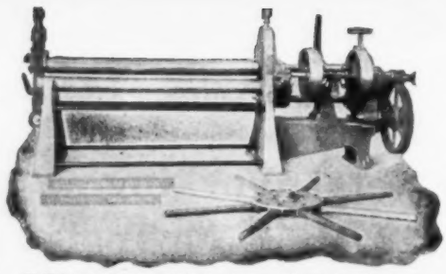

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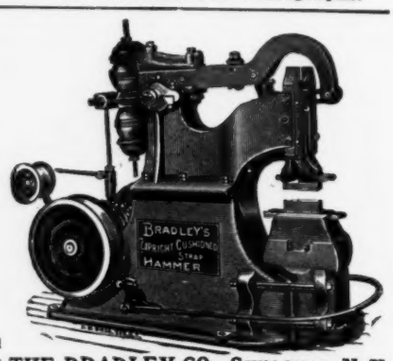

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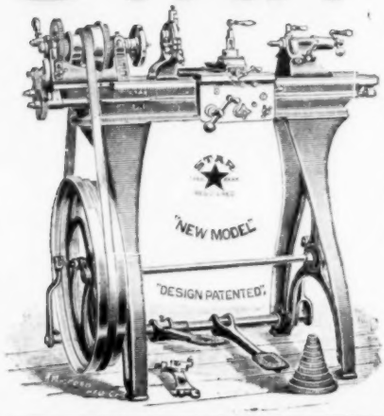

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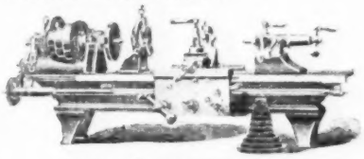

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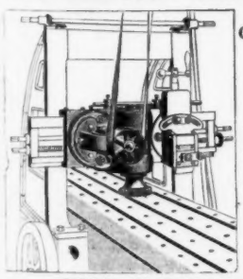

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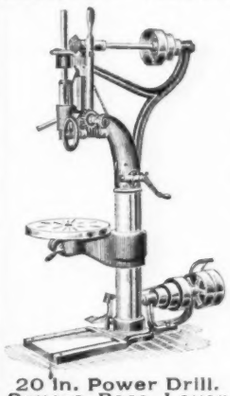

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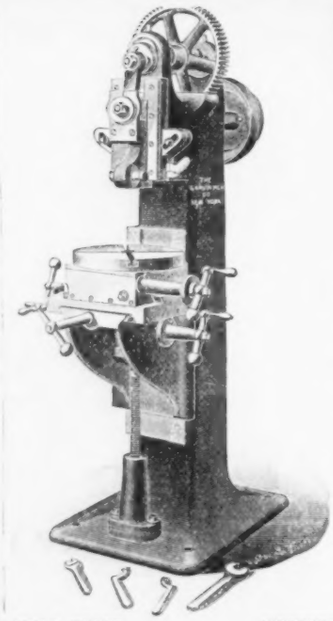

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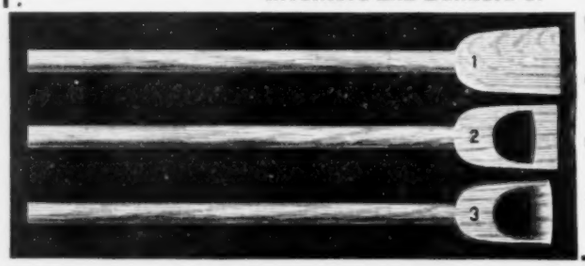

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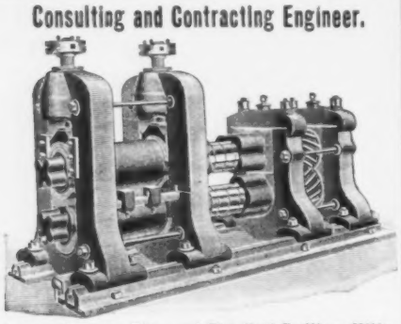

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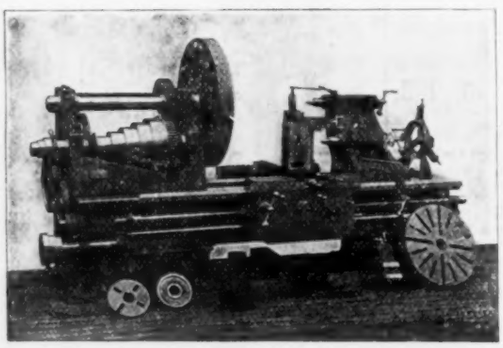

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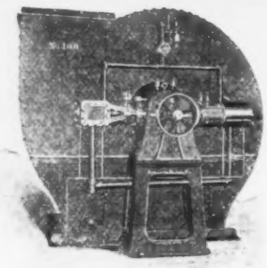

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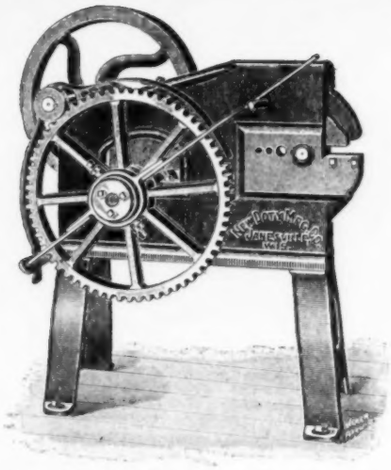

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These shears run by belt power. They are very strong and powerful and very simple in construction. They are designed for cutting up bar iron, either flat, round or square. The knives for flat and round iron are independent of each other and always ready for use. Some of the users of these tools have written us that the tool saved its cost in one year.

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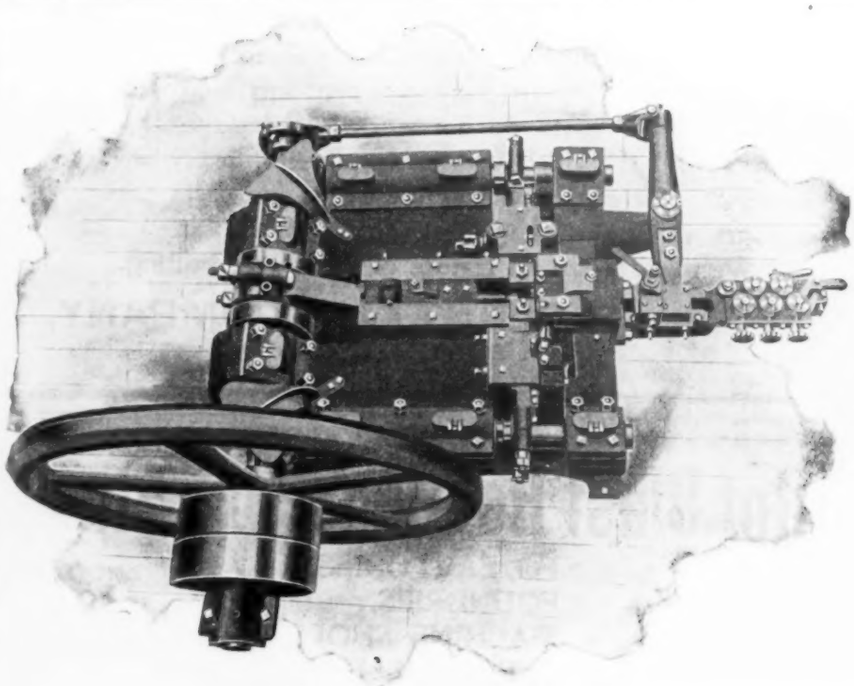

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Wire Nail Machine,

GUARANTEED WITHOUT AN EQUAL.

BUILT BY THE

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" Barbing "
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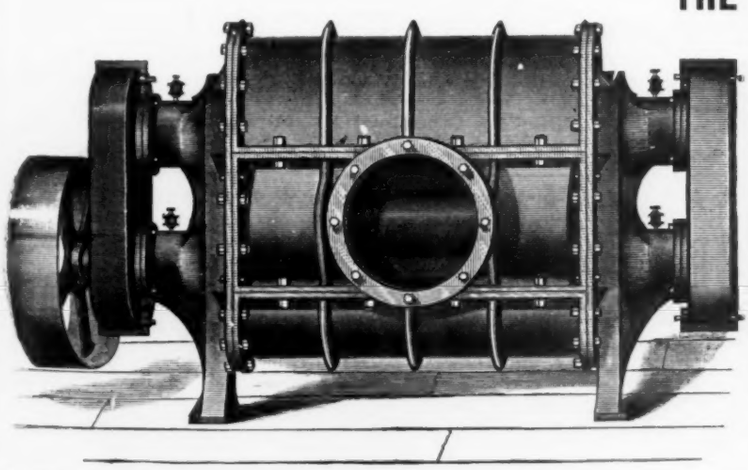

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The Green Rotary Pressure Blower,

And it weighs less, occupies less space, and is more positive in action than any other blower.

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AUTOMATIC MACHINERY

for making Wood-Screws, Rivets, Stove and Tire Bolts, etc., also Special Machinery to order.

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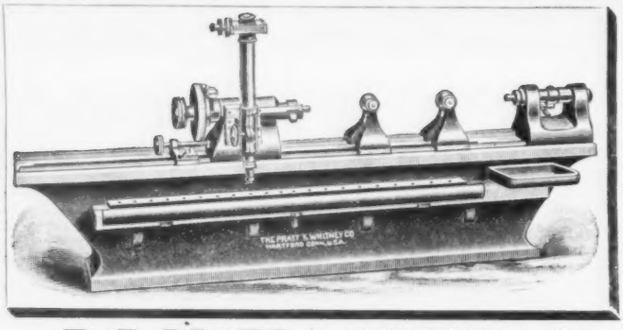

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12 to 48 inch capacity, including Microscope and Graduated Bar for insuring *absolute standard uniformity*. The new Decimal Gauge, the American Railway Master Mechanics' Association Standard, adopted by all railroads in the United States for gauging wire and sheet metal. Cylindrical Size, Forged Caliper, U. S. Standard Screw Thread and Special Gauges for every variety of interchangeable production.

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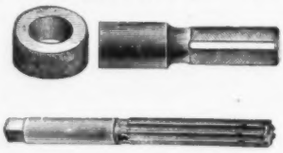

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If you do you know how quickly you feel the difference in power necessary when anything goes wrong, or if parts do not work well together, and the ease with which you push a well fitted wheel.

The difference between cut gears and cast gears is just as perceptible in your power plant.

We make a special feature of bevel-gear cutting.

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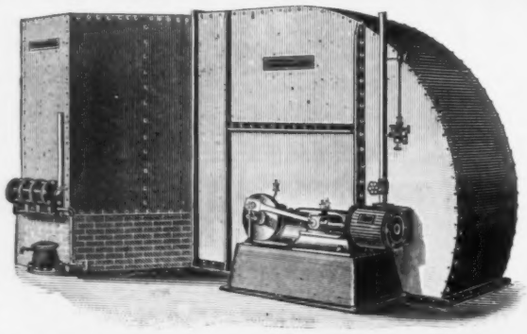

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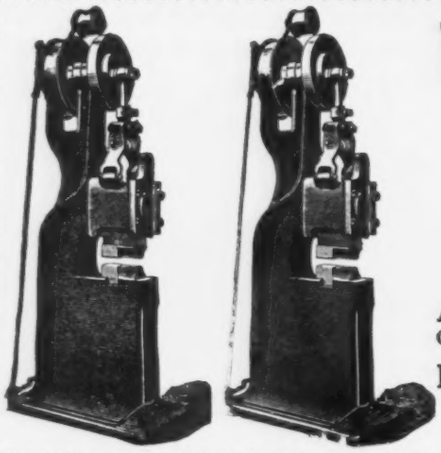

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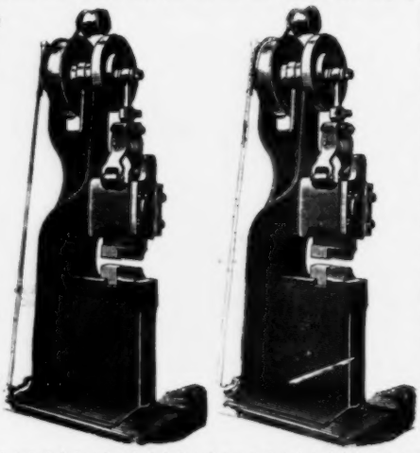

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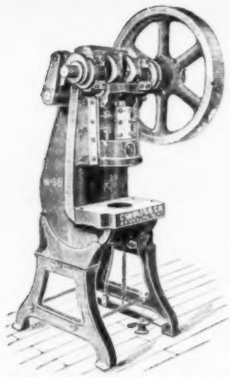

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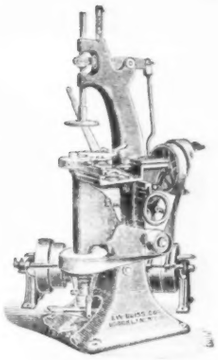

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Adjustable Incline Presses.

Solid Frame Punching Presses.

Double Action Drawing Presses.

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Automatic Feed Presses.

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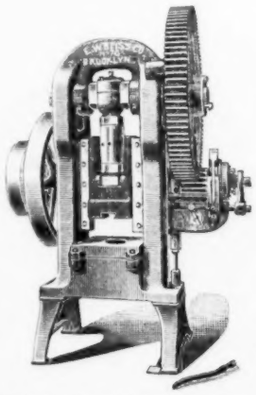
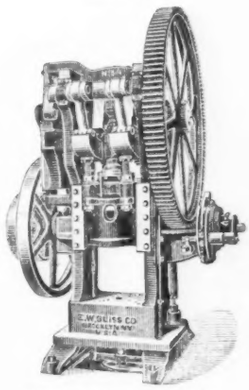


"Bliss" No. 76¼ Geared Press.



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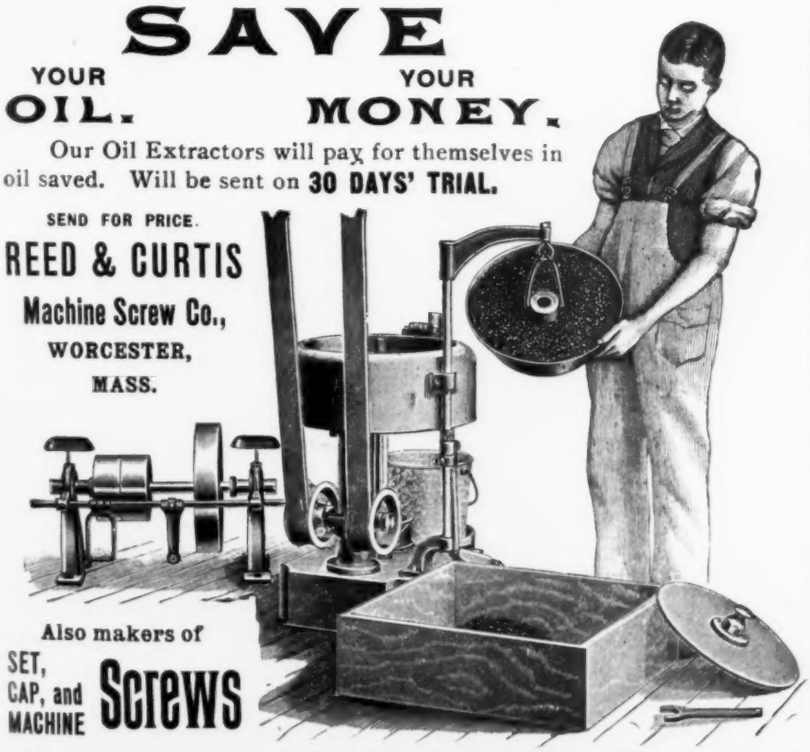

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We make name plates for some of the largest makers of machinery in the U. S., and we would be pleased to send you sample and quote price.

No Plate Too Large or Too Small.

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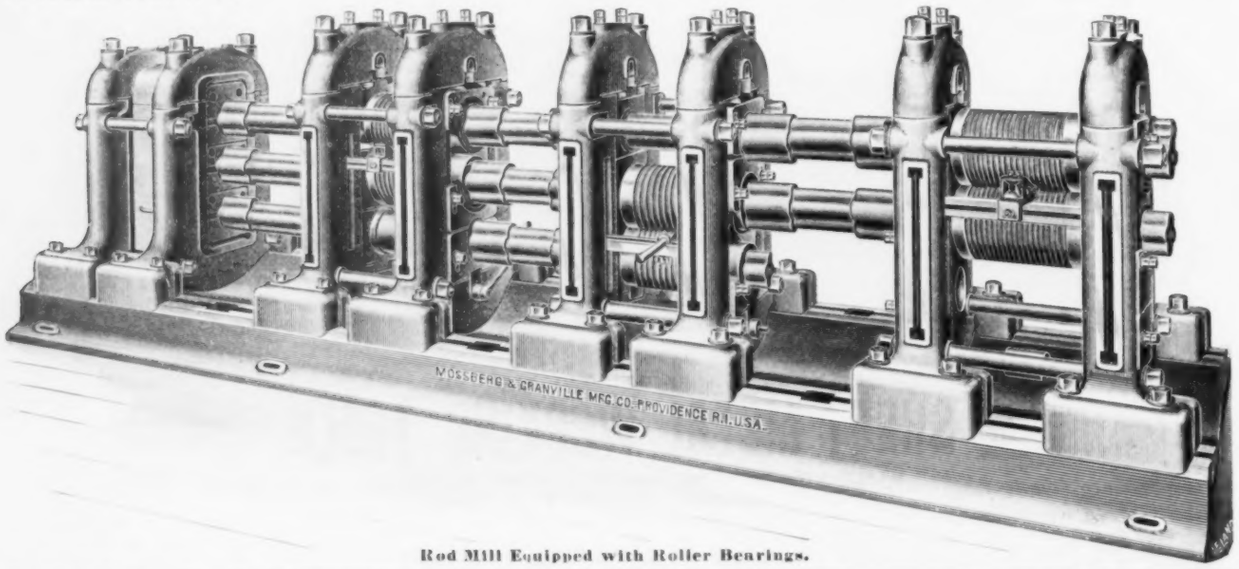

Rod Mill Equipped with Roller Bearings.

THE PROCESS OF

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AS EXEMPLIFIED IN THE

Cincinnati Miller,

is a startling revelation to the user, in the accuracy of work produced, in the efficiency of the tool itself with its many changes of table feeds for speeds to suit each piece of work, to say nothing of the variety of work that can be produced with it; in short,

IT'S A WONDER!

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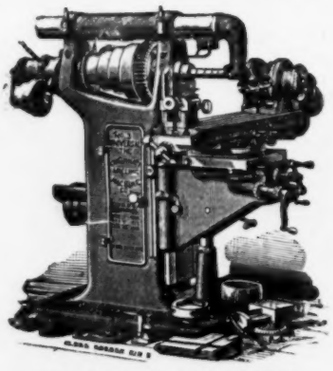
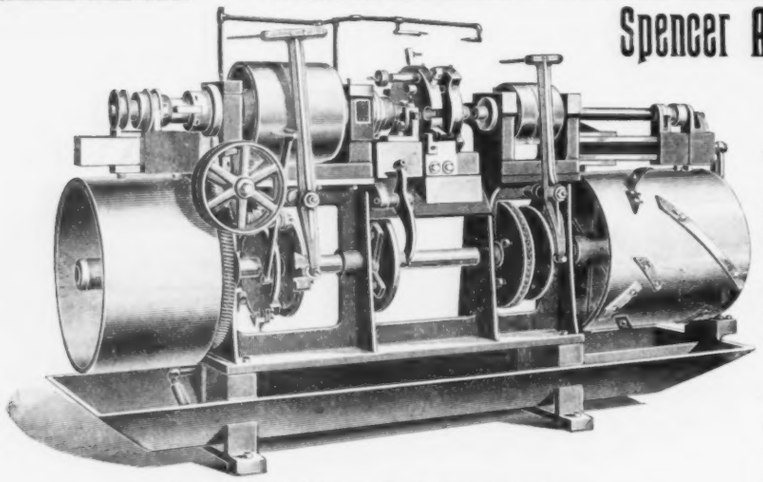


The "Cincinnati" Miller.



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Spencer Automatic Machine Screw Co.,

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We build automatic screw machines in three sizes and two styles.

We have each of these sizes and styles in stock, and can therefore guarantee prompt delivery.

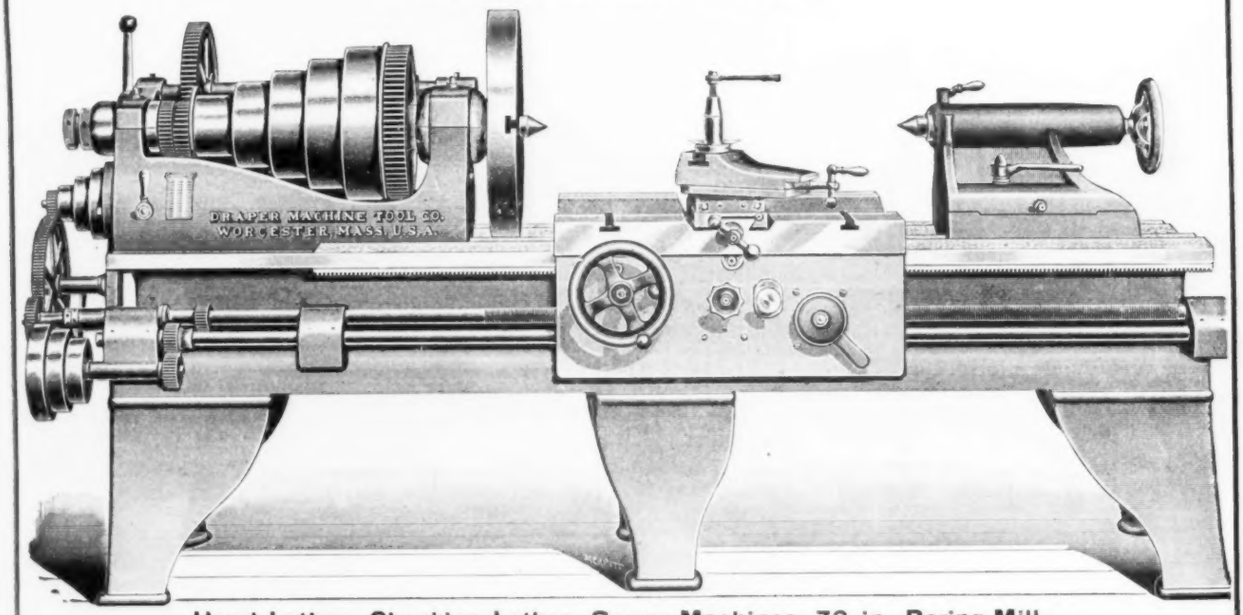
We shall be pleased to mail a catalogue to any address In our catalogue you will find complete descriptions and illustrations.

We can also mail samples of work which we are daily turning out on these machines at our own works.

If you are interested, we hope to be favored with your inquiries.

22 in. x 10 ft. SCREW-CUTTING LATHE,

WITH COMPOUND POWER CROSS FEED REST. 1¾ in. HOLE IN SPINDLE.
SHIPPING WEIGHT, 4170 Lbs



Hand Lathes, Chucking Lathes, Screw Machines 72 in. Boring Mill,
Engine Lathes from 14 in. to 42 in. inclusive, and Crank Planers.

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BULLARD TURRET MACHINE H.

FRICTION CLUTCH HEAD. ADJUSTABLE STOPS. FINE FEED ATTACHMENT.

Ready for prompt shipment

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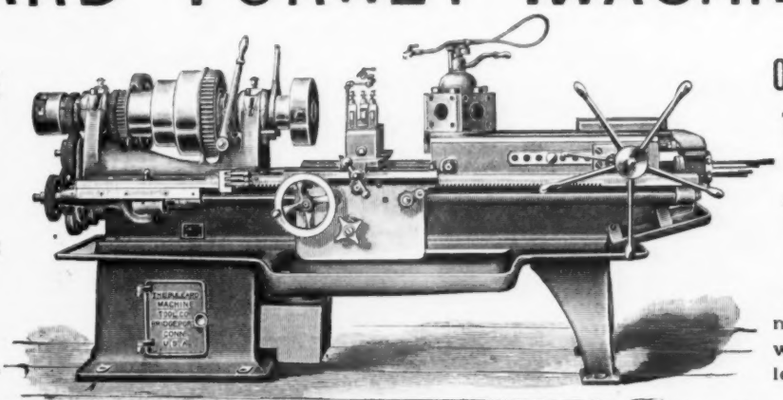

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OUR BORING AND TURNING MILLS
ARE
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Every wide awake manufacturer should write for our Catalogue A.

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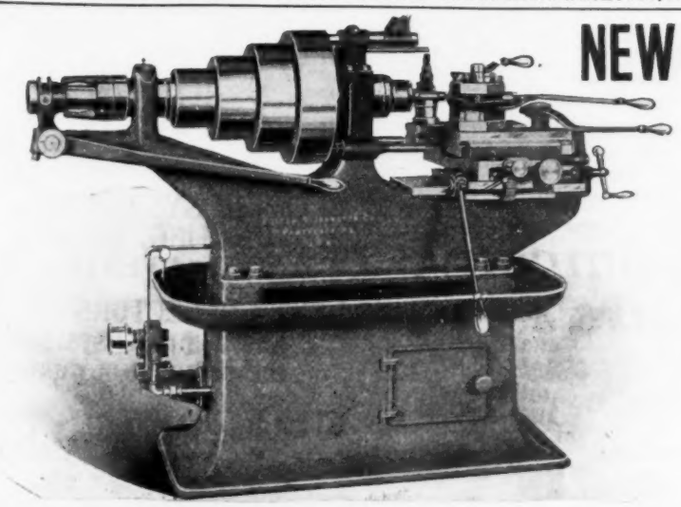

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will rapidly turn, bore, chuck, face, etc., machine parts.

All work is done and all parts changed without stopping the machine whether the internal collets, the expanding collets or the lever chuck is being used.

WE ALSO MANUFACTURE

Universal Shaping Machines and
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PAWTUCKET, R. I., U. S. A.

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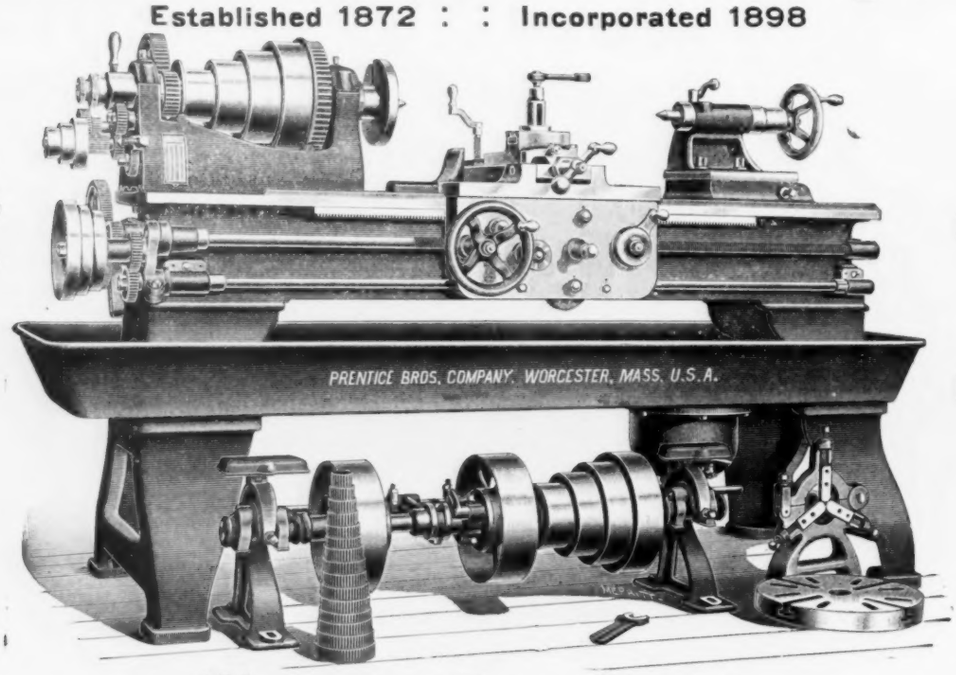

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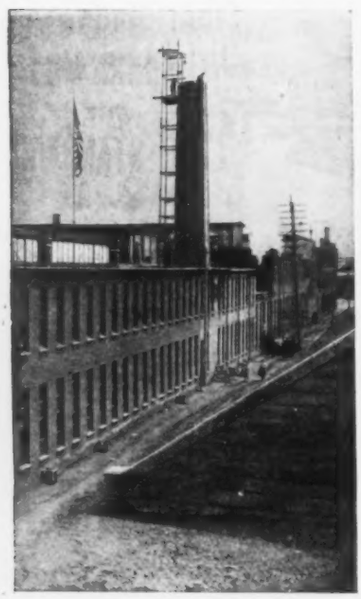

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FAN DRAFT.

By using cheap fuels we save 20%.

If interested send for Catalogue 107 and list of parties using

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PRESSURE and BLAST BLOWERS,
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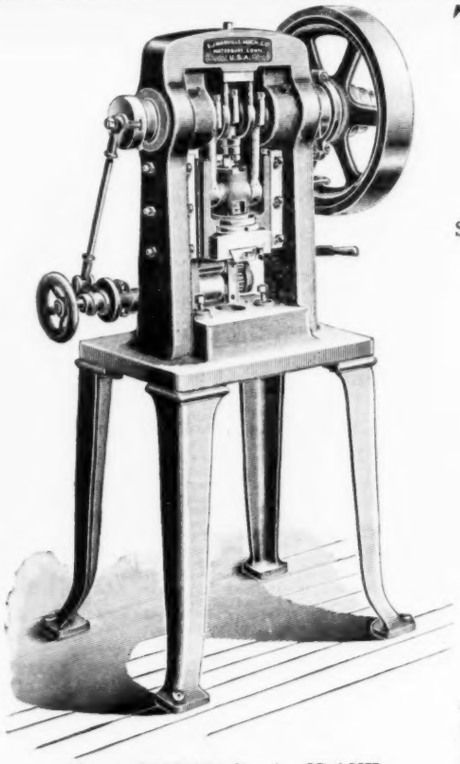

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IN... Double Acting Power Presses

RIGID CONSTRUCTION, RAPID ADJUSTMENT

"Pillar" and "Open-Back" Patterns

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BUILDERS OF...

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FOR ANY PURPOSE

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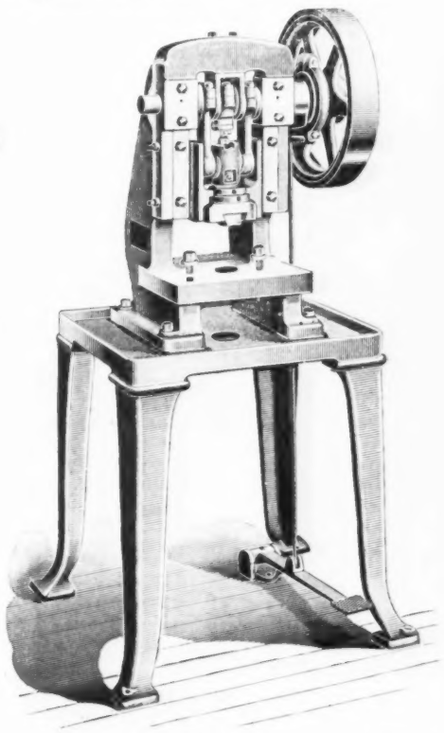

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THE E. J. MANVILLE MACH. CO.,

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BROWN & SHARPE MFG. CO.,

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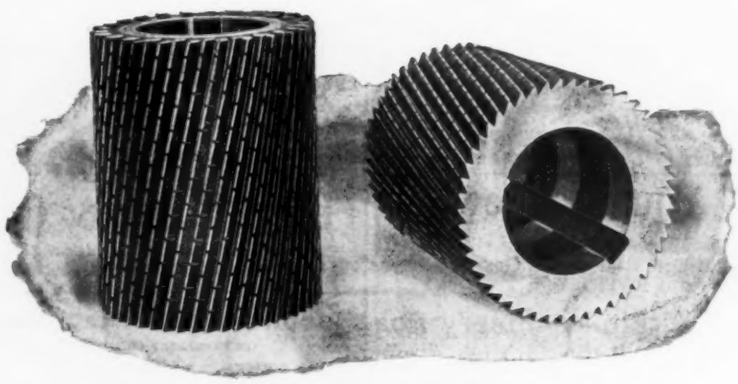
CUTTERS.



Pair of Interlocking Milling Cutters 24 in. Long, 10 in. Diameter, 6 in. Hole.

33 Varieties and 3950 different Sizes Listed in our 1899 Catalogue.

Leading Hardware and Supply Dealers carry our Cutters in stock and are pleased to transmit orders for Special Cutters.

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Second-hand Machinery,

In good order for immediate delivery.

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12 in. x 5 ft. Reed.
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32 in. x 18 ft. Waterman.
36 in. x 16 ft. Fitchburg.
40 in. x 22 ft. Fifield.
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UPRIGHT DRILLS.
20 in. Blaisdell.
25 in. Barnes, complete.
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72 in. swing, Standard, complete.
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Univ. Grinder, Brown & Sharpe.
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10 in. crank, New Haven.
12 in. " Gould-Eber.
14 in. " Prentiss.
15 in. friction, Prentiss.
15 in. crank, Smith-Mills.
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2 9-32 in Bardons & Oliver.
1 5-32 in. " "
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1 15-16 in Garvin, complete.
2 in. Davis-Egan, complete
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No. 1 Univ., Brown & Sharpe.
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B'port auto. heavy, wt. 3000.
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ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
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16 in., 20 in., 24 in., 36 in., 54 in. and 60 in. Planers.
26 in., 50 in. and 60 in. Radial Drills.
Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

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Nos. 129 and 131 N. Third St., Phila., Pa.

BOILERS.

2 125 H. P. Loco. Style, 100 lbs. steam pressure.
2 100 H. P. Loco. Style (Wooten fire boxes).
7 80 to 100 H. P. Loco. Style, 100 lbs. steam.
1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished.

POULTERER & CO.,
410 Bullitt Bldg., Phila., Pa.

FOR SALE.

26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in. built by C. H. Brown & Co., Fitchburg, Mass. FRANK McSWEGAN & SONS, Dover St. and Franklin Square, N. Y.

For Sale.

One 16 in. x 32 in. "Fishkill" Horizontal Corliss Engine, practically new.
One 200 lb. "Bradley" Helve Hammer.
One 60 in. x 60 in. x 12 ft Planer.
One 6½ x 10 in. Double Cylinder, Double Drum "Crook" Hoisting Engine with boiler attached.

The above are second-hand but in first class condition.

L. F. SEYFERT'S SONS,
437-441 N. 3d St., Philadelphia, Pa.

Second-hand Machinery,

IN FINE CONDITION.

60 in. New Haven Pulley Lathe with face plate jaws.
30 x 12 H. C. Fish Lathe, compound rest, taper attach. and chuck.
21 x 9 Lodge-Davis Lathe, comp'd rest, taper attach.
18 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
16 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
21 x 24 ft. Perkins Plain Rest and Chuck.
20 x 8 Putnam compound rest and chuck.
14 x 6 Prentice Elevating Rest and Chuck.
40 in. New Haven Drill, Back Geared, Power Feed.
34 in. Barnes " " " " "
25 in. Prentice " " " " "
30 x 30 x 6 ft. Pond Mch. Tool Co. Planer.
28 x 24 x 5 ft. New Haven Planer.
20 x 16 x 3 ft. " " "
17 in. Juengst Shaper.

S. M. YORK CO.,
Cleveland, Ohio.

FOR SALE.

SHAPERS.

16 in. to 32 in. stroke.

J. STEPTOE & CO.,
CINCINNATI, O.

48 in. x 33 in. x 8 ft. Single Head Planer,
21 in. x 15 ft. Fitchburg Lathe.
1 1-16 in. Brown & Sharpe Wire Feed Screw Machine.
⅜ in Spencer Coil Wire Automatic Screw Machine.
32 in. Gear Cutter, not automatic.
No. 2 Hilles & Jones Double End Punch and Shear, 16,000 lbs.
Send for complete list just out.

HENRY F. HILL,
123 Oliver Street, Boston, Mass.

SECOND-HAND MACHINERY.

1 Planer 60 in. x 60 in. x 14 ft. Screw feed, cheap.
1 Iron Planer, 36 in. x 36 in. x 14 ft.
1 26 x 24 x 5 ft. Pond Planer.
1 Iron Planer, 22 x 22 x 5 ft., Hendey make.
1 Engine Lathe, Friction feed, 48 in. x 19 ft., cheap.
1 Engine Lathe, 42 in. x 14 ft.
1 Heavy Pit Lathe, to swing 10 ft.
1 52 in. Bickford Boring Mill, A1.
1 50 lb. Upright Belden Hammer.
1 10,000 lb. Morgan Steam Hammer.
1 1000 lb. Steam Hammer.
1 2000 lb. Miles Steam Hammer.
1 400 lb. Morgan Steam Hammer.
1 250 lb. Morgan Steam Hammer.
1 48 in. Horizontal Boring Mill, Pond make.
1 Clayton Air Compressor, 16 in. x 16 in. x 14 in. stroke.
1 250 lb., 1 200 lb. Farrell Drop.
Machinery appraised any part of country.

NEW YORK MACHINERY DEPOT,
Office, 178 Broadway, N. Y.

Equal to New.

No. 5 Mossberg & Granville Single Acting, Style B, Geared Press. Weight 4500 lbs.

A. B. Pitkin Machinery Co.,
PROVIDENCE, R. I.

I have 100 Horse Power Locomotive Boiler, good for 125 lbs. pressure, nearly new, extra large fire box; Round and Square Iron Tanks, all sizes; Boiler Shells for stacks and culverts; Pumps, Upright and Horizontal Boilers, Engines, Blow-off Tanks. All kinds of Scrap Iron and Metals bought.

ROBERT M. CUNLIFFE,
1140-42 Washington Ave., Philadelphia, Pa.

FOR SALE CHEAP.

One second-hand Punching Machine. Capacity 1⅛ hole in 1 in. plate. Address "PUNCHING," office of *The Iron Age*, 232-238 William St., N. Y.

MOVING.

Rather than move the following new and second-hand machines into our new shop, we will make SPECIAL PRICES on them. Write us!

LATHES.
12 in. x 5 ft. Bement.
12 in. x 6 ft. Silk.
16 in. x 7 ft. Harrington.
21¼ in. x 11 ft. Thayer & Houghton
25 in. x 8 ft. Putnam, not a.c.
26 in. T. C. Lathe, 3½ in. hole in spindle. Tool front and back.
27 in. x 27 ft. L. & D., Taper.

SHAPER.
No. 2 Fitchburg, Traveling Head.

PLANERS.
24 in. x 24 in. x 6 ft. Whitcomb.
24 in. x 24 in. x 8 ft. Smith-Silk.
26 in. x 26 in. x 8 ft. Putnam.

DRILLS.
30 in. Wheel & Lever Drill.
30 in. Wheel & Lever, B. G.
24 in. B. G. P. F. A. S.
28 in. B. G. P. F. A. S.
32 in. B. G. P. F. A. S.
40 in. B. G. P. F. A. S.
1 Henley Swing Drill.
14 in. Aurora Sensitive.
16 in. Sensitive, Flickinger.

MISCELLANEOUS.
16 in. x 6 ft. Fox Monitor.
24 in. Pulley Lathe.
24 in. Turret Lathe, 4500 pound.
26 in. Pulley Lathe.
Harrington Suspension Drill No. 1 for plate work.
1 Brass Valve Machine.
Emery Stands for two wheels 1 in. x 2 in.
Garvin Screw Slotter.
Hand Forge, Foos Mfg. Co., Scientific No. 3.
Sellers Twist Drill Grinder.
Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS
IN
MACHINE TOOLS.
Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe.
22 in. x 12 ft. Flather Engine Lathe.
No. 0 Pratt & Whitney Screw Machine with wire feed.
1 Fitchburg 30 in. x 30 in. x 8 ft. Planer.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear.
Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
1 3-head Slotter for locomotive frames; bed 36 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,

156 Oliver St., Boston, Mass.
12 South Canal St., Chicago, Ill.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
48 in. x 20 ft. Fifield.
36 in. x 18 ft. Fifield.
28 in. x 27 ft. Fifield.
27 in. x 10 ft. Davis&Egan
25 in. x 12 ft. S.C.Forsaith
24 in. x 20 ft. Fifield.
21 in. x 16 ft. S.C.Forsaith
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
16 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.

17 in. x 17 in. x 4 ft. Putnam Planer.

30 in. x 30 in. x 6 ft. Putnam Planer.
Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
1¾ in. x 5 ft. Turret Lathe.
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & K.
No. 4½ B. G Garvin Miller
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
15 in. Davis&Egan Shaper.
26 " " " "
5 Diamond Grinders.
25 Horse Power Motor.
25 lb. Barnes Drill.
3 50 lb. Bradley Strap Hammers.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago

Second-Hand Tools.

ENGINE LATHES

1 13 x 5 Plain Turret Lathe.
1 14 x 5 Putnam.
1 15 x 5 Bullard.
1 15 x 6 Wood & Light.
1 16 x 6 Fifield.
1 16 x 6 Star.
1 16 x 6 Porter.
1 17 x 8 Niles.
1 17 x 8 Muller.
1 18 x 8 Lodge & Davis.
1 18 x 10 Lodge & Barker.
1 18 x 7 Pond.
1 18 x 8 Putnam.
1 18 x 8 Lodge & Barker.
1 20 x 8 Lodge & Barker.
1 18 x 10 Sheppard.
1 18 x 10 Steptoe McFarlan.
1 19 x 7 Lodge & Davis.
1 20 x 8 Pond.
1 20 x 0 Porter.
1 24 x 12 Hatfield.
1 25 x 18 Leonard.
1 24 x 16 Sellers.
1 26 x 20 Pond.

PLANERS

1 17 x 17 x 4 Putnam.
1 30 x 30 x 8 New Haven.
1 32 x 32 x 12 Fitchburg.

DRILLS.

1 18 in. Sensitive Drill.
1 26 in. Barnes Drill.
1 28 in. National Drill.
1 4 ft. Plain Radial Drill.
1 5 ft. Niles Half Universal Radial Drill.
1 Wall Radial Drill.

SHAPERS

1 12 in. Smith & Mills.
1 15 in. Steptoe.
1 15 in. Betts Traveling Head.
1 26 in. Friction.

SCREW MACHS.

1 ⅝ Screw Machine.
1 1¼ Screw Machine.
1 1⅝ Screw Machine.
1 2⅛ Screw Machine.
1 No. 3 Pratt & Whitney, Friction Head.
1 No. 3 Pratt & Whitney, Plain head.
1 Davis & Egan Hub Machine.

MISCEL.

1 Garvin Hand Milling Machine.
1 1¼ in. Pratt & Whitney Cutting-off Machine.
1 Newton Keyseater.
1 Valve Milling Machine.
1 5 in. Cutting off Machine.
1 15 x 5 Lodge & Davis Hand Lathe.
1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ¾, 1¼, 1⅝ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in Hand Lathes.
1¼ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. Co.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.
Second-Hand Machinery.

1 54 in. x 22 ft. Pond Engine Lathe, triple back geared and raising blocks to make it swing 66 in.
1 30 in. x 23 ft. New Haven Engine Lathe.
1 24 in. x 16 ft. Fish Engine Lathe, blocks to make it swing 32 in.
1 56 in. x 30 ft. Double Head Column Lathe.
1 54 in. x 54 in. x 20 ft. Hercules Planer.
1 36 in. x 36 in. x 9 ft. Pond Planer, good as new.
1 24 in. x 24 in. x 6 ft. Whitcomb " " "
1 No. 4 Cincinnati Universal Miller.
1 No. 1 " " "
1 No. 2 " Plain "
1 No. 2 B. & S. Universal Grinder.

Also numerous other smaller tools, shafting, pulleys, hangers and belting, all in fine condition.

Write for complete list.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

ONE ALDRICH PLANER FOR SALE.

24 in. x 24 in. x 6 feet. In good running order. Price very low.

HURLBUT-ROGERS MCH. CO.,
So. Sudbury, Mass., U. S. A.

18 in. x 42 in. Corliss
Cheap Before Removal.

An 18 in. x 42 in. Wetherill Corliss Engine with 14 ft. x 26 in. belt wheel, heavy jack shaft and pulley, 100 ft. 24 in. heavy double leather belting, Wetherill feed water heater. Used only two years and in splendid order.

THOMAS P. CONARD,
119 So. Fourth St., Philadelphia, Pa.

FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
24 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " " " "
10 Frisbie Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 3 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
12- 8½ x 10¾ x 10 Compound Worthington Pump.
10-16 x 10¼ x 10 " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
12 B'way, N. Y. City.

FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & B. Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen'r'g Set.

WICKES BROS., Saginaw, Mich.

Must Be Sold.
6 New 40 in.
Boring Mills.

WILL QUOTE LOW PRICES.

READE & BOWLER,
216-217 American Trust Bldg.
Warehouse, 20-22 Frankfort St.
CLEVELAND, O.

CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 ft. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.

4 18 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

S. T. LUND,
54 Oliver St., Boston, Mass.

FOR SALE.

(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS,
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.

13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines

No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.

16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 20 ft., 3 heads.

Shapers.

9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.

6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.

Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.

24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools.
Write us for anything you want.
Prices on application.

The Niles Tool Works Co.,

136-138 Liberty St., New York City.

Second-hand Machinery.

MILLING MACHINES.

2 No. 2 Brown & Sharpe Plain Millers, '98 pattern.
3 No. 1 Cincinnati Plain Millers.
3 Prentiss Hand Millers.
2 Garvin Hand Millers.
4 Pratt & Whitney Lincoln Millers, '98 pattern.
Beaman & Smith Duplex Miller.
No. 5 Becker Vertical Miller with automatic feeds.
No. 3 Hilles & Jones Vertical Miller.
New Cincinnati Milling Machines for immediate delivery.

WIRE FEED SCREW MACHINES.

No. 3 Warner & Swasey, '98 pattern.
No. 6 " " "
Bardons and Oliver Hub Machine.
No. 3 Garvin, eight hole turret.
No. 2 Garvin.
3 No. 1 Pratt & Whitney.
8 x Jones & Lamson.
New Dreses-Mueller Screw Machines in stock.

DRILL PRESSES.

Six spindle Bickford Heavy Gang Drill.
No. 4 Four spindle Pratt & Whitney.
Three spindle Baker Bros. Gang Drill.
Prentice Bros. Suspension Drill.
New Sensitive Upright and Gang Drill in stock.

The above machinery is in most cases equal to new.

AGENTS FOR

Gould & Eberhardt Shapers and Gear Cutters.
Cincinnati Milling Machines.
Pond Planers.
Bickford Radial Drills.
Lodge & Shipley Lathes.
National Bolt Cutters.

Investigate our new Disc Grinder.

Marshall & Huschart Machinery Co.,
62 So. Canal St., Chicago, Ill.
19 So. Water St., Cleveland, O.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ¼, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6¾ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $250 each. Numerous machines not mentioned for want of space.

C. R. BIGELOW, 45 Dey St., New York City.

ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg. Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place,
Philadelphia, Pa.

Special Bargains in Second-hand Machinery.

60 in. Bement vertical boring mill.
48 in. Bickford vertical boring mill.
33 in. N. Y. Steam Eng. Co., car wheel borer.
Style "D" Newark horiz. boring machine, 4 in. bar 7 ft. table.
2 No. 4 Waterbury presses, 1¼ in. stroke.
No. 1 Stiles press.
50 lb. Bradley strap hammer.
125 lb. Forsaith trip hammer.
2 850 lb. Merrill, fric. board drop.
16 ft. Hilles & Jones plate planer.
66 x 60 x 16 Waterbury planer.
36 x 36 x 8 Betts Machine Co. planer, good as new.
2 in. Bement bolt cutter
1½ in. Merriman automatic opening.
8 ft. Betts bending roll.
Set of hand bending rolls.
¾ in. style B Adt. riveting machine with c. shaft.
¼ in. Adt. wire straightening and cutting off machine.
16 in. Gould crank shaper.
15 in. Lodge & Davis crank shaper.
16 in. Betts traveling head, crank shaper.
14 in. Betts traveling head, crank shaper.
12 in. Betts traveling head, crank shaper.
4-spindle Colts gun stock profiler.
600 lb. Bement steam hammer.
5 x 16 Tubular barrow steam hammer.
No. 1 Brown & Sharpe univ. miller.
No. 3 Garvin plain miller.
No. 1½ Garvin plain miller.
3 Colts Lin. Pat. back geared.
3 Ames. Lin. Pat. back geared.
70 in. Pit Lathe.
30 and 33 in. Putnam pulley lathes.
40 in. Pulley lathe
8 No. 2 Higley cold sawing machines, in fine order.
Also large assorted stock of other tools on hand. Send for complete list. Write us for anything you need.

PRENTISS TOOL & SUPPLY CO.,
Buffalo Office, 603 D. S. Morgan Bldg.
New York Office, 115 Liberty Street.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

2 Alligator Shears.
1 Rotary Shears.
Machinery of all kinds.
Tanks all sizes for sale or exchange for scrap iron.

WM. ECKBOLDS' SONS,
711 E. Girard Ave., Philadelphia.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

Large Lathes Wanted

That will swing 60 in over the carriage; compound rest, with cross feed. 16 ft. between centers preferred.

ALSO ONE HEAVY PLANER: Platen 36 in. wide; 13 or 14 ft. long.
Send description, lowest price, and state where same can be seen, to
BOX 164, Worcester, Mass.

WANTED.

One Iron Planer, to take 84 inches wide.
Also one Radial Drill, about 6 ft. radius.
Send full descriptions with prices, to
"TOOLS,"
Care *The Iron Age*, New York.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

SECOND-HAND
Metal-Working Machinery
At Bargain Prices.

Lathes.

One 18 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 26 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N. Y. City.
Branches at Chicago and Pittsburg.

For Sale.

Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
Florence, Mass.

SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine, 85 H. P.	$225
One 9x18 " " " " 25 H. P.	125
One 65 H. P. Hor. Tubular Boiler, complete,	225
One 50 " Vertical " " "	200
One 40 " " " " "	200
One 12" Double Rocking Scrap Shear, - -	125
6", 5", 4", Section Steam Pumps, each -	100

SCHULTZ & CO., 14 So. Broad St., Philadelphia.

FOR SALE CHEAP.
Blowing engine suitable for blast furnace. Size of steam cylinder 24 x 36; size of blowing tub 73 in. Built by well known maker; in use but 12 months. Guarantee condition almost equal to new. Will sell at a low price if sold at once. Address "ENGINE," office of *The Iron Age*, 232 William Street, N. Y. City.

FOR SALE.

One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes.
31 x 108 in. Plate Mill, Roughing Rolls, 28 x 84 in., live tables.
1 110 in. Plate Shear.
Pair 36 x 40 in. Horizontal Reversing Engines.
1 18 in. Bar Mill.
2 10 in. 3-high Bar Mills.
Engines, Shears, Roll Lathes, 20 Boilers.
Blowers.
One 10 ton Locomotive Crane.
One 2 ton Locomotive Crane. Both standard gauge.
Supply and Hydraulic Pumps.
Large lot of other machinery such as used in a large steel works

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh, Pa.

Providence Steam Engine Company,
PROVIDENCE, R. I.
SECOND-HAND ENGINES FOR SALE.

One 12 x 36 Wheelock Engine, right hand, wheel 9 ft. diameter, 17 in. face, solid, 44 horse power.
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One pair 30 x 60 George H. Corliss Engines, wheel 28 ft. diameter, 90¾ in. face, 463 horse power, (per engine) $3850.
One 9 x 18 Exeter Engine, right hand, wheel 7 ft. diameter, 12 in. face, 35 horse power, 100 revolutions, $550.
One 18 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 25 in. face, 175 horse power, 80 revolutions, $770.
One 20 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 26 in. face, 219 horse power, 80 revolutions, $1650.
One 12 x 36 Babcock & Wilcox Engine, left hand, wheel 10 ft. diameter, 24 in. face, 52 horse power, 70 revolutions, $330.
One 10 x 24 Rider Engine, right hand, wheel 7 ft. diameter, 14 in. face, 31 horse power, 92 revolutions, $110.
One 14 x 48 George H. Corliss Engine, right hand, 16 ft. wheel, 20 in. face, 100 horse power, 75 revolutions, $275.

The horse powers are all figured on 80 lbs. steam, ¼ cut-off. Deliveries are f.o.b. Providence.

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MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.
Send for special circular No. 12 if interested.

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PATTERNS OF BOILER TOOLS,

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Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

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1 Taplin Rice & Co. Boiler, 5 ft. 6 in. x 15 ft., full front, Pumps, Injectors, Governors, Shafting, Floor Stand, Pulleys, Belt Tighteners, Belting, etc., etc. Apply to the

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BEMENT BORING MILL.

1 54 in. Bement Boring and Turning Mill.
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1 5 ft. Full Universal Radial Drill.
1 Gisholt Tool Grinder.
1 12 in. Turret Lathe.
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All good as new.

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All kinds of machinery, new and second-hand, at very reasonable prices.

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About 1,500,000 lbs. Steel Plates,
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One 11 foot, in halves. 10 tons weight. One 8½ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

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A good second-hand Corliss Engine, either vertical or horizontal; cylinder about 36 to 42 in. by 48 to 60, with heavy fly wheel. Address

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Over **25,000 dozen Table Knives and Forks, and Knives only**—desirable patterns; **1,000 pairs and sets Fine Carvers; 1,000 dozen Fine Hollow Ground Razors, American Pockets and Scissors and Shears, 3,000 dozen Silver** Plated, German Silver and T.P. Tea and Table Spoons and Forks and Medium and Dessert Knives, **1,000 dozen Butcher,** Bread and Pallet Knives.

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Air Compressor capable of pumping 200 cu. ft. of free air per minute.
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Second hand Lathe, about 48 in. swing. Short bed preferred. Must be in good condition. Give description and price. Address
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At Titusville, Pa., the only vacant store there; lately remodelled, modern front, excellent location, moderate rent. Address.
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Pond Index Miller.
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Can give bargains in new and second-hand machine tools at all times.

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Required at once, FOREMAN for an emery wheel manufactory; state age, experience and salary expected. "Emery," care *The Iron Age*, New York.

A MACHINE BLACKSMITH familiar with tempering, hardening, &c.; one experienced in die work preferred. Address with full particulars and wages desired, "Blacksmith," care *The Iron Age*, New York.

Man to handle machinery, used to forging, carriage manufacturing, &c., either on salary, commission, or as a side line. Address "G. W. C.," care *The Iron Age*, New York.

A young man, not exceeding 35 years of age, to travel in vicinity of Little Falls, N. Y., to represent a house carrying a complete line of carriage hardware, builders' hardware, harness hardware, tinware, steam fittings, packing and a great variety of other artices; one preferred that has an acquaintance in the Upper Mohawk Valley. Address, stating age, experience and salary expected, "Mohawk," care *The Iron Age*, New York.

FOREMAN for a foundry employing about 150 molders and making sanitary and heating goods; no applications will be considered unless the parties are able to give references and show their ability to handle a varied output. "S. I. T.," office of *The Iron Age*, 232-238 William street, New York City.

A competent DRAFTSMAN or MECHANICAL ENGINEER with capital to take an interest in a live concern with a good line of standard tools who desires to add another large line. Address "J. M. R.," office of *The Iron Age*, 22-24 Pickering Building, Cincinnati, Ohio.

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Undisplayed Advertisements for Situations Wanted not exceeding twenty-five words Fifty cents each insertion. Additional words two cents each.

American, 32, single, graduate in engineering and chemistry; 10 years' experience (eight with two concerns) exclusively as department manager and superintendent in several lines of special manufacturing; finishing shortly two years' engagement as factory organizer and manager in England, desires change; prefers America, but open to engagement in Europe; specialty, getting results in new and difficult work at reasonable cost and time; salary idea (now receiving) $3000; only good, substantial connection considered. For references and further particulars address "Results," Low's Exchange, 3 Northumberland avenue, London, England.

BAR MILL ROLLER now open for engagement; have had about 20 years' experience on 18-22 inch mills, and can furnish good references as to character and ability from past places of employment. Address "Bar Roller," care *The Iron Age*, New York.

Experienced hardwareman as TRAVELING SALESMAN or MANAGER of a store; have been manager and buyer of a store carrying the following goods: general hardware, paints, oils, iron, steel, stoves, ranges, agricultural implements; in connection charge of plumbing and tin shop; best of references. Address "W. D. A.," care *The Iron Age*, New York.

A hardwareman, 42 years of age, 20 years' successful business experience, 4 years as traveling salesman; has also run a successful business for himself; is now looking for an opening with some reliable house or would buy outright where he can have reasonable assurance of success. "W. S. S.," care *The Iron Age*, New York.

CHEMIST.—Young technical graduate, for the last several years employed in one of the largest iron laboratories of Pennsylvania, wishes to change; best of references. "Chemist," care *The Iron Age*, New York.

CAR WHEEL MAKERS.—Thoroughly up to date man in all branches of this business desires a change; have theoretical education and extensive practical experience; any firm in need of competent superintendent please address for further information "Car Wheels," care *The Iron Age*, New York.

As SUPERINTENDENT, CHIEF or CONSULTING ENGINEER by chemical and mechanical engineer, graduated from abroad, and with eight years' varied experience in responsible positions with iron and steel works in this country; correspondence invited. Address "Ch. & M. E.," care *The Iron Age*, New York.

As FOUNDRY FOREMAN; able to produce light and heavy castings; experienced in handling men, mixing and melting iron and up to date practice. Address "W. E. W.," care *The Iron Age*, New York.

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Builders' hardwareman with 12 years' experience in both wholesale and retail builders' and general hardware, as SALESMAN either in the house or on the road; capable of making estimates from architects' plans; can give A1 reference. Address "Builders' Hardware," care *The Iron Age*, New York.

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By a young man; eight years' experience hardware jobbing line. "G. S. B.," care *The Iron Age*, New York.

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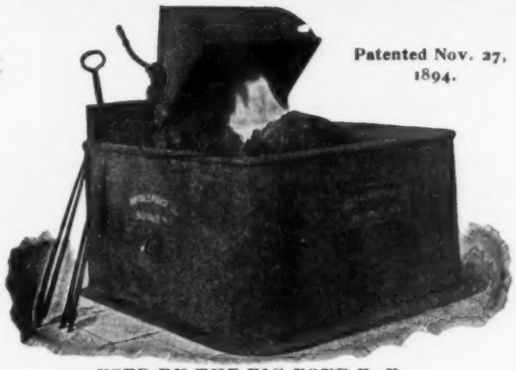

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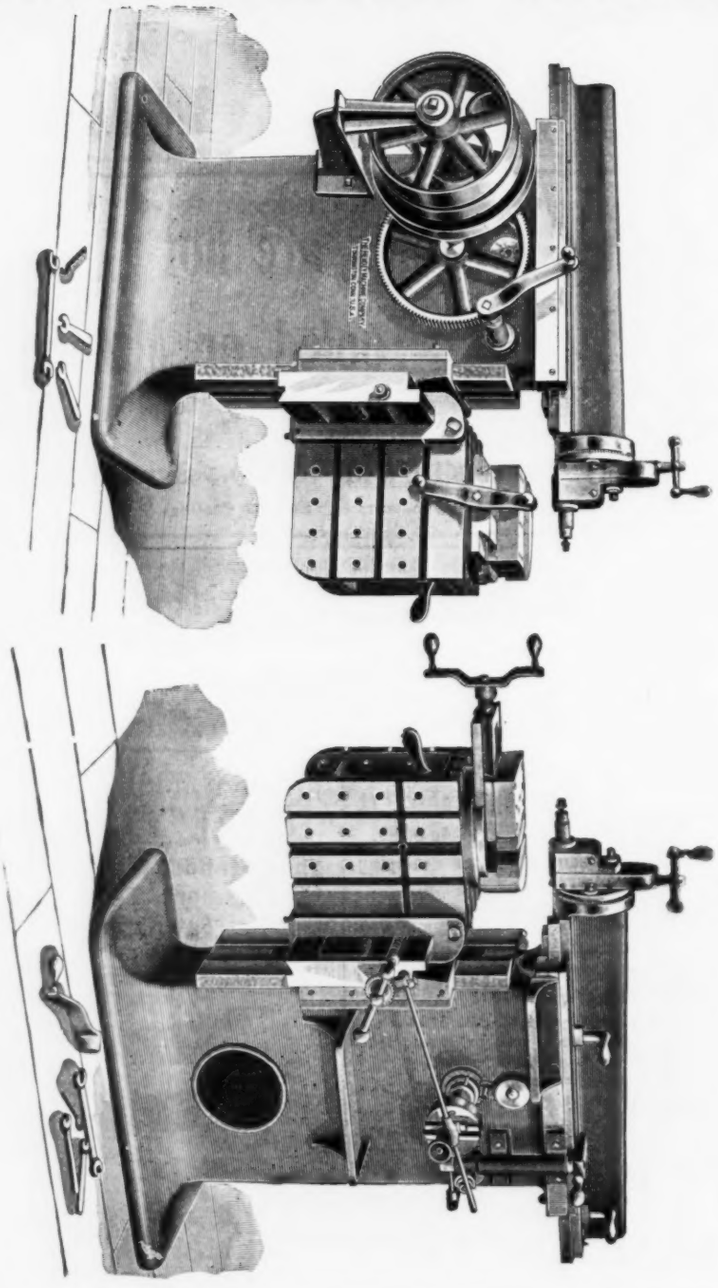

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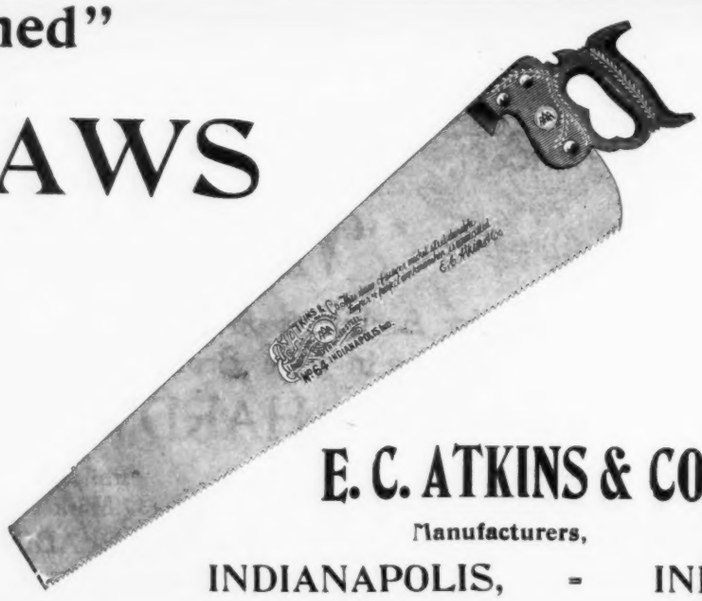

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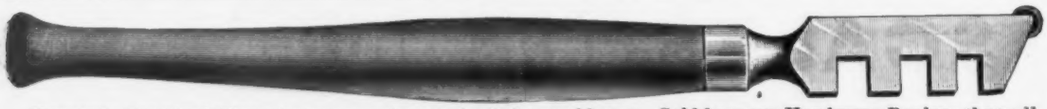

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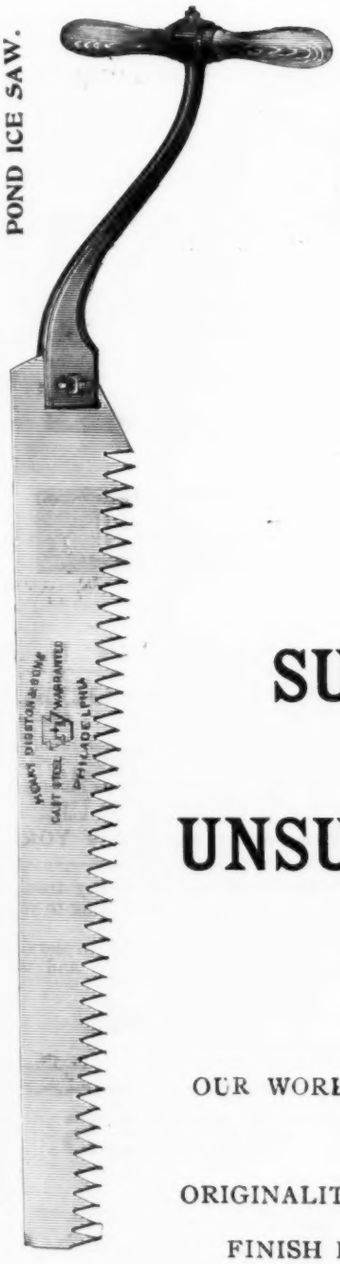

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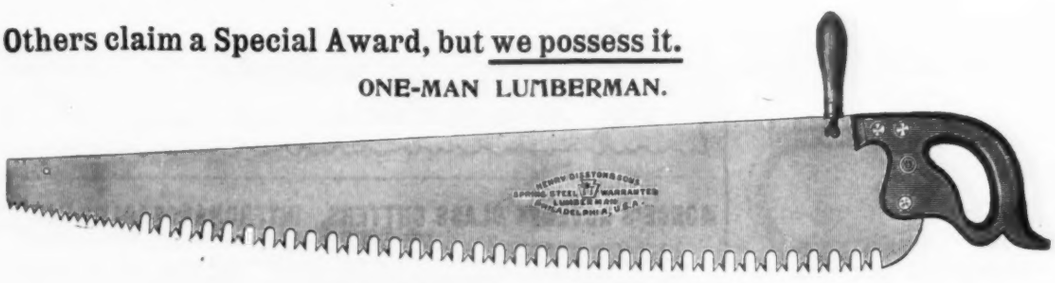

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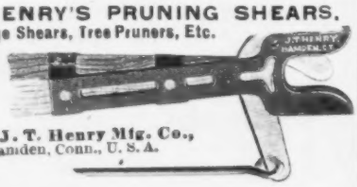

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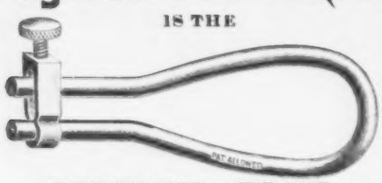

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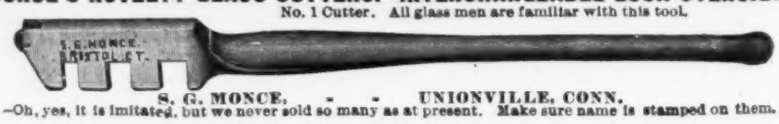

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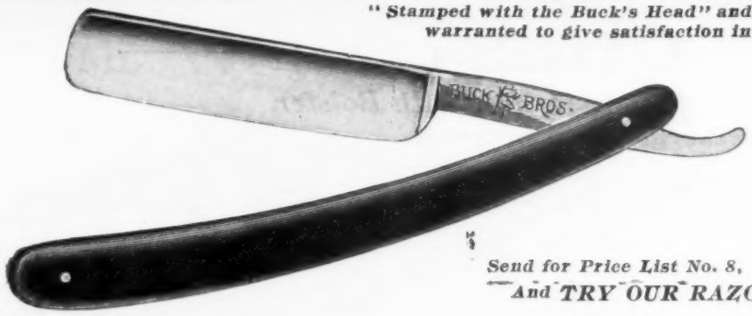

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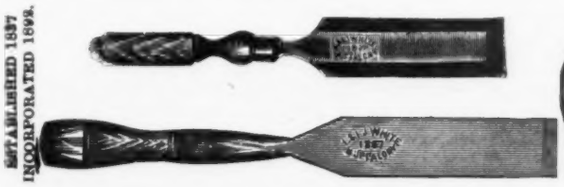

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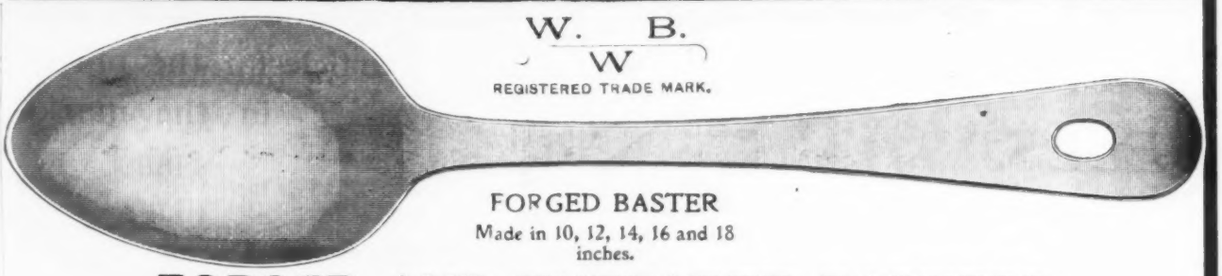

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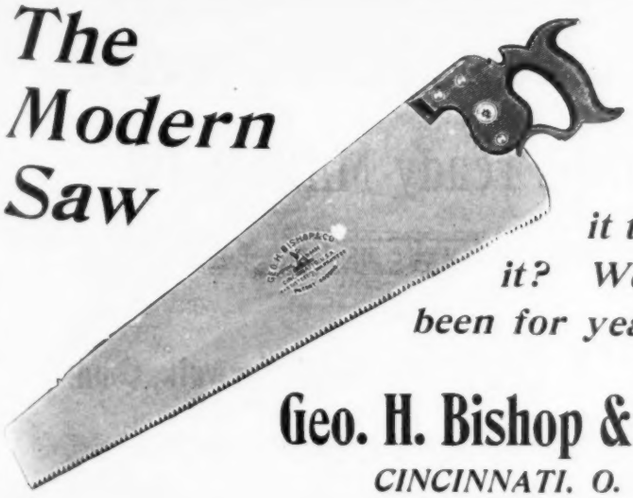

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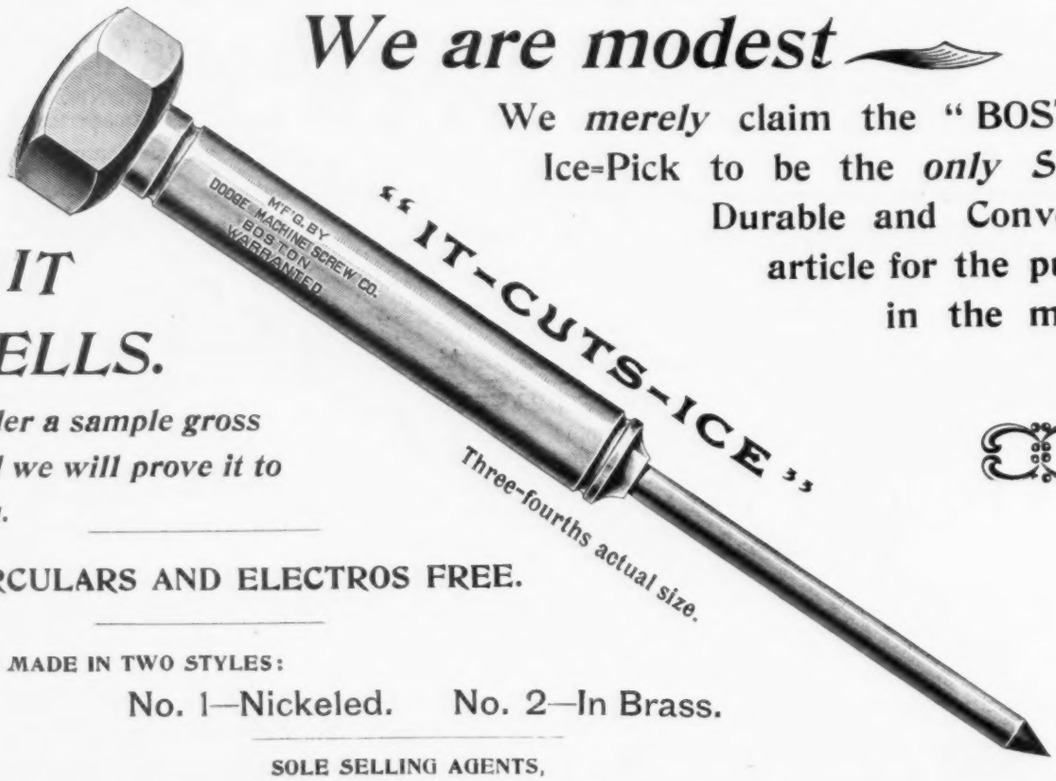

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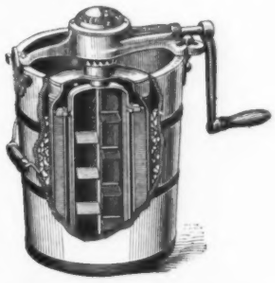

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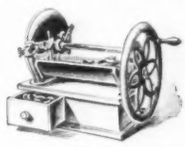

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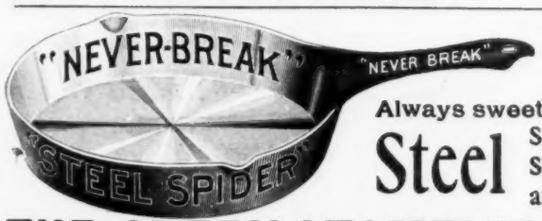

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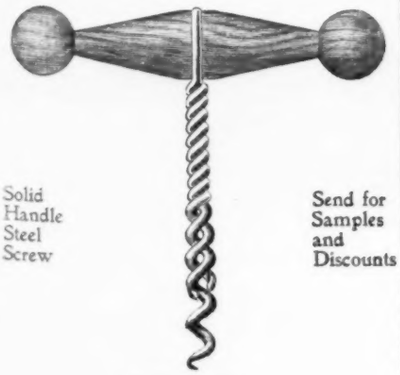

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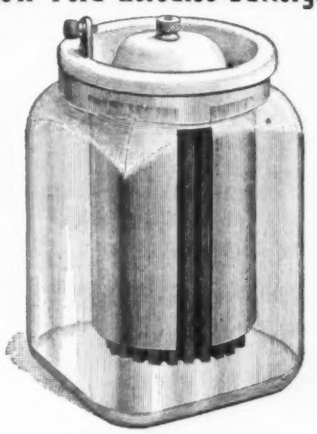

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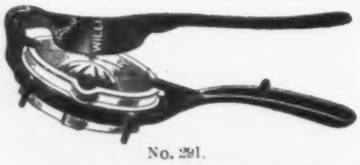
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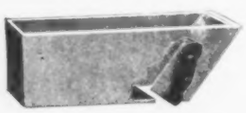
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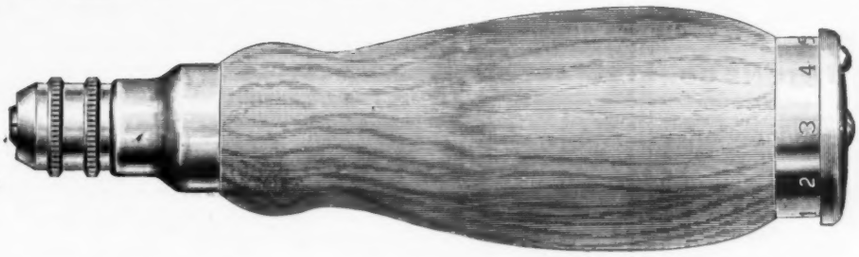

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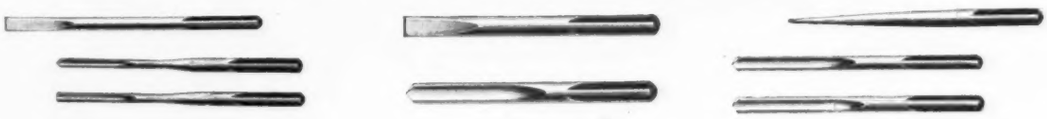

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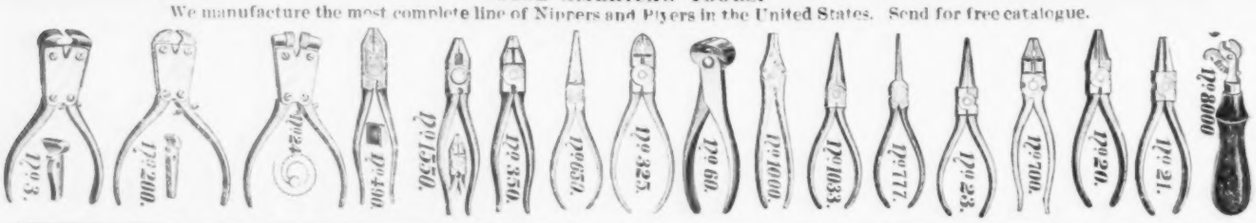

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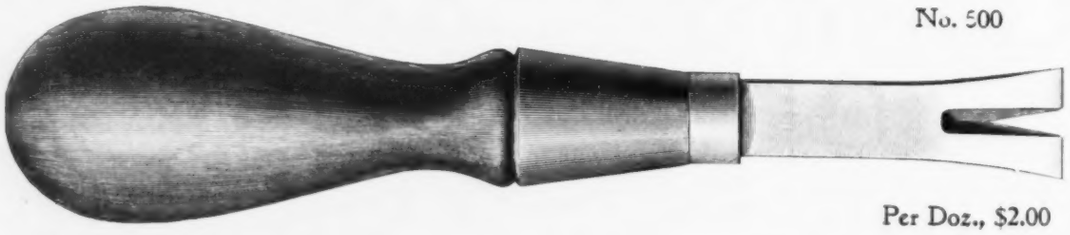

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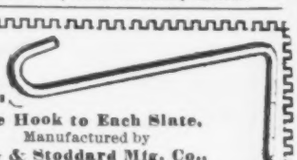

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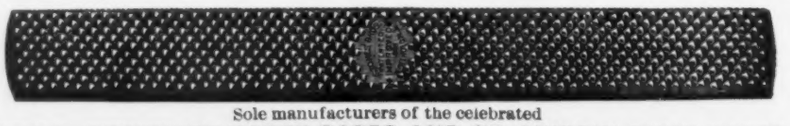

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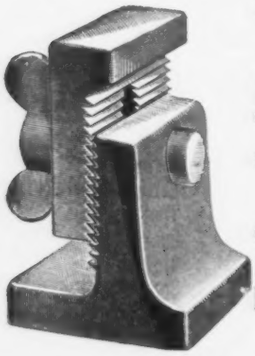

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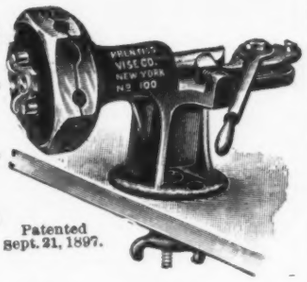

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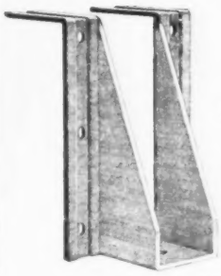

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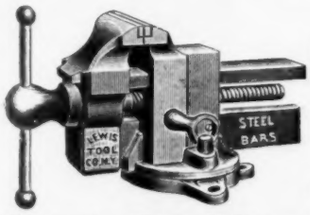

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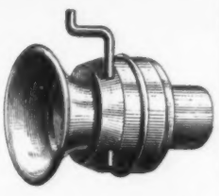

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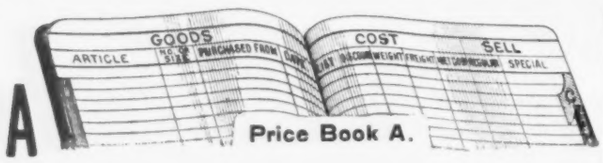

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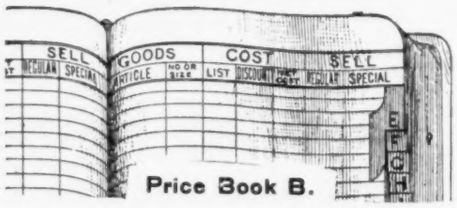

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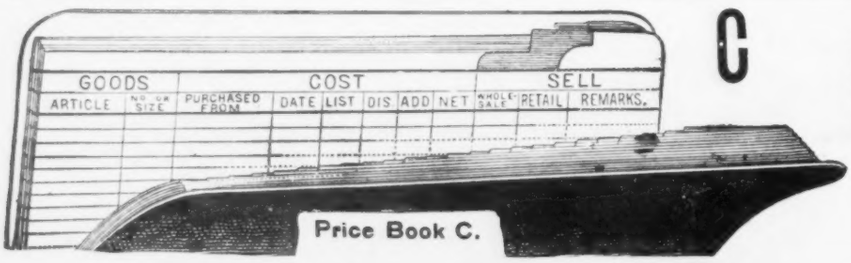

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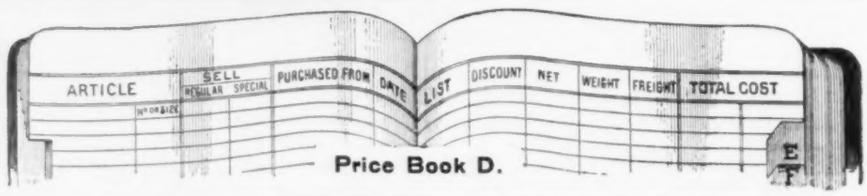

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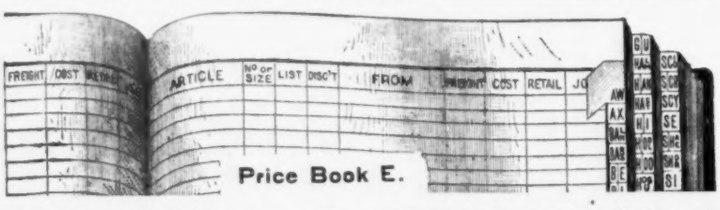

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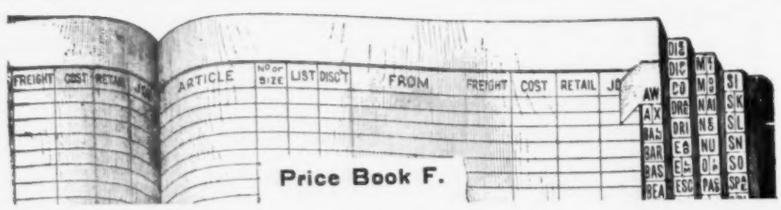

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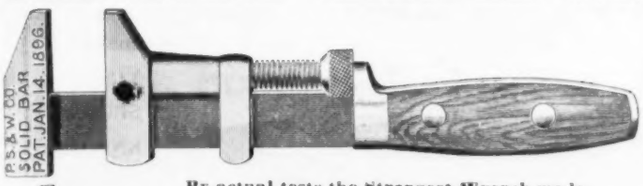

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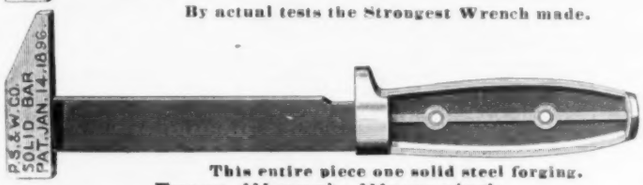

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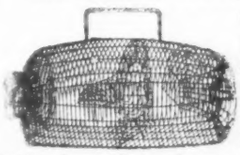

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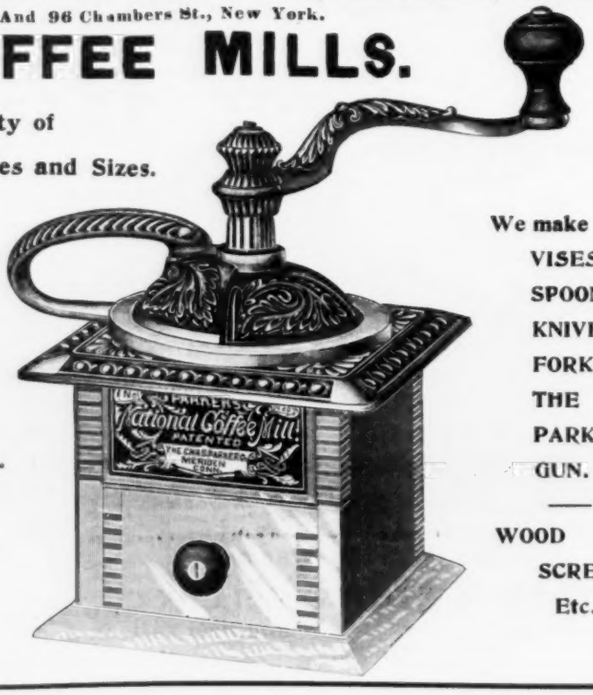

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Thoroughly seasoned ash lumber.
Elegance of finish.
Carved panels.
Swinging and removable base board.
Solid bronze hardware, Roman gold finished.
Zinc lined. Patent casters.
Galvanized iron flues, ice rack and shelves.

The shelves being so constructed that small dishes placed upon them will not tip over.

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The insulation used is ***Granite Rock Wool*** and Charcoal Sheathing.

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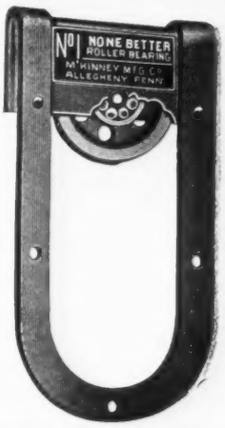

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SCALES,

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Corrugations run full length.

Waterway full bore of hose.

It is made of *brass* and is seamless.
Can be shoved in old hose without loosening inside tube.
Heavy corrugations prevent pulling out.
It is very stiff and does not collapse.
Fastened in hose with either clamps or wire bands.

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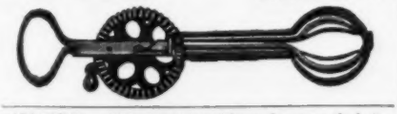

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Simple; smooth-running; noiseless. All sizes, capacities and styles. Hardware dealers can sell them.

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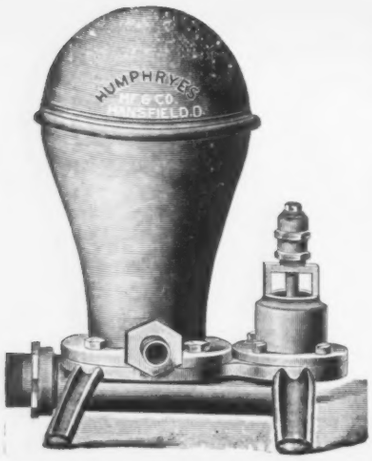

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For House, Farm, Factory Mine and Mill use. For Electric, Steam, Water, Gas and Gasoline Power.

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STAR WIND MILLS,

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"Hoosier" and "Fast Mail" Iron Pumps.

Secure the Agency for 1899.

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Steel Single Track House Door Hanger.

The facts are:

We make the most complete line of ***Door Hangers*** in the world.

We make the best that mechanical skill can produce for

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Liquid Door Check and Spring.

PERFECTION ATTAINED AT LAST.

Entirely new in style and mechanism, **strong simple and effective**, giving in results all the best achievements of other checks, together with new and valuable features only to be found in this.

It has a vertical case, with openings only at the top.

It has no plugs or caps screwed to the cylinder ends. It cannot leak. There is no way for the liquid to escape after the Check is applied.

The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material throughout.

It works to perfection, closing the door quickly and gently.

It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

Regular finish, Gold Bronze No extra price for Silver Bronze or Dead Black when so ordered. Furnished Plated in Brass, Nickel, Copper or Silver, Plain or Oxidized, at a reasonable extra charge. No extra charge for Brackets where needed.

Manufactured by

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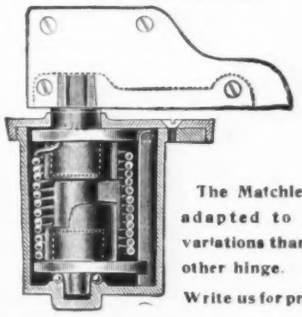
THE MATCHLESS

Double-Acting Floor Hinge.

BALL BEARING.



The Matchless is adapted to more variations than any other hinge.

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The most reliable, cheap Speed-counter made Registers automatically. Satisfactory prices to buyers.

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STARS MADE IN FIVE SIZES.

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Outfits for Repairing Boots and Shoes.

Patent Reversible Iron Stands and Lasts, Lap Lasts, Boot Jacks, Hammers, Foot Rests, &c.

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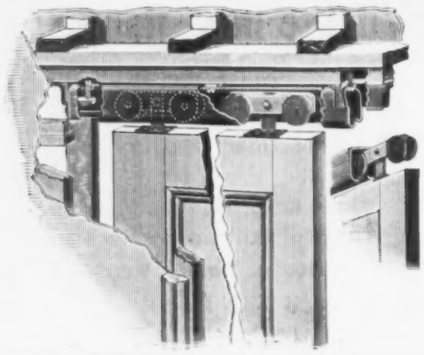

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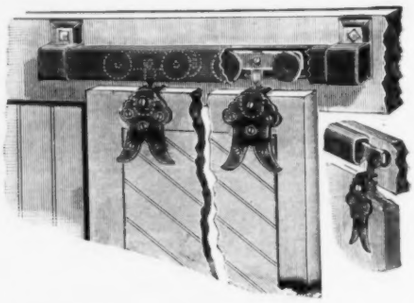

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Cold Rolled Steel,
Accurate in Construction,
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Hardware.

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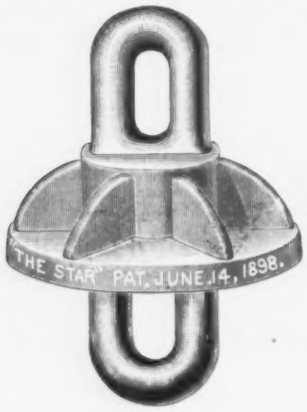

Will draw a continuous stream of water Has a flat surface, the water cannot crowd back. Best material and guaranteed to give satisfaction. A perfect bucket, its construction recommends it

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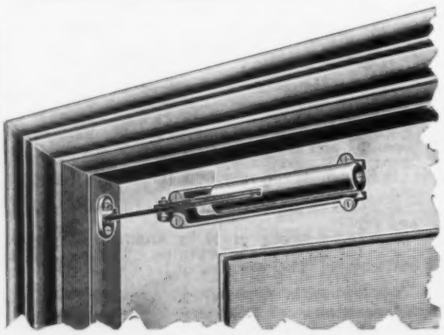

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An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

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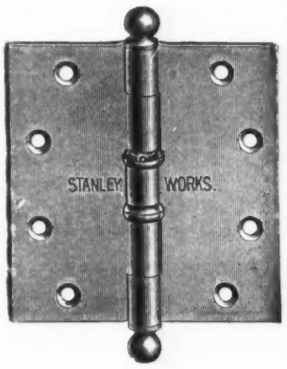

They are being extensively advertised, and you will have calls for them. Many architects are specifying them for *all* their best work. The reason is obvious. There is nothing else made in the way of hinges possessing so many merits. You know what these merits are? If not, send for illustrated booklet.

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SAFETY, PLUMBERS' and LADDER CHAINS,
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Now made by
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Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware and Fancy Metal Goods.

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Manufacturers of Steel Door Hangers, Hinges, Pulleys, and other Hardware Specialties.

ESPECIALLY ADAPTED FOR EXPORT TRADE.

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WELDLESS CHAIN SPECIALTIES. CHEAPEST—STRONGEST—BEST.

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Made on the principle of a square knot and ***cannot*** be pulled out.

Other wire links are now in the market, so if you want the ONEIDA *WIRE LINK CHAIN,* remember this shape.

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AUTOMATIC SCREEN DOOR CATCH.

These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. Mounted counter sample furnished with first order of 2 dozen catches. Ask your jobbers for them. If they don't keep them, write us.

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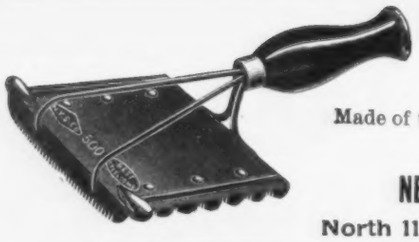

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Made of the finest cold rolled steel and standard everywhere. A full line of 75 numbers.

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It Costs Nothing

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They are durable, well made, cheap and are becoming an absolute necessity in all stores. They are made to order, and will fit all kinds of shelving.

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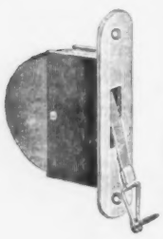

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MAIN OFFICE AND WORKS,

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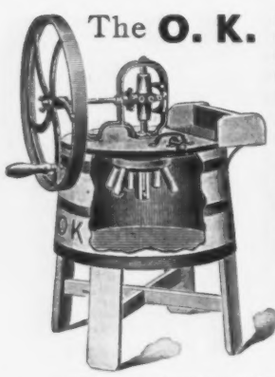

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The large fly wheel has a broad rim, to which a belt can be attached.

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Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for **15 years.**

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THE BICYCLE STEP LADDER.
Especially adapted for Hardware Stores.

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**

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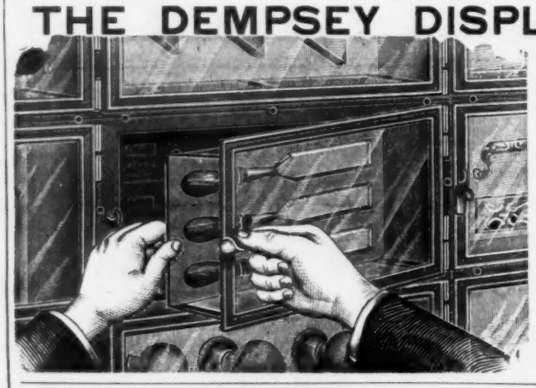
THE DEMPSEY DISPLAY DOORS.



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No rust, no soiled stock.

Stock is never handled until sale is made.

Removable sample boards.

The finest fixture made and costs no more than the old style.

See full description in *The Iron Age* of September 22d.

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HARDWARE SHELF BOXES.

Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request.
We also make a general line of Paper Boxes.

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PERFECT SHELF BOXES

WE MAKE

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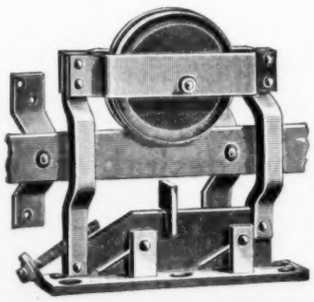
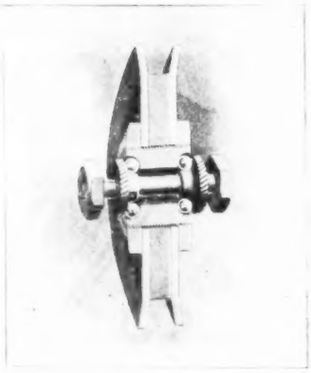
IS THE

Best House Door Hanger

MADE.

Other Styles for Less Money.





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This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.
When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

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Caldwell Sash Balance.

It stands the test of time.

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Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
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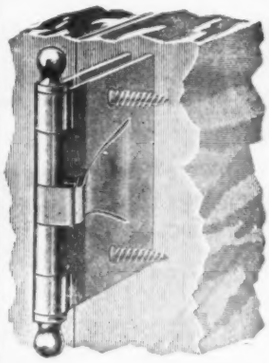

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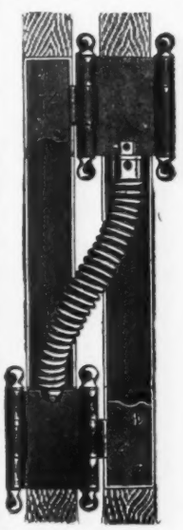

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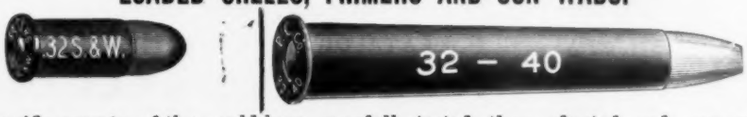

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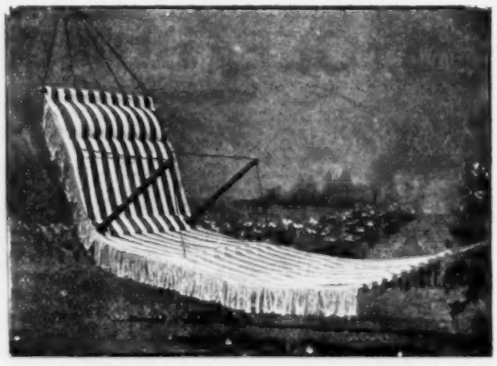

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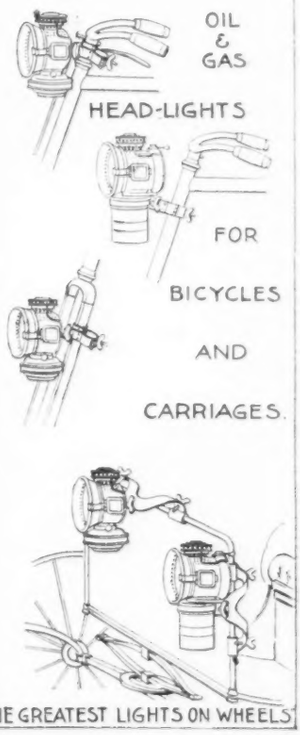

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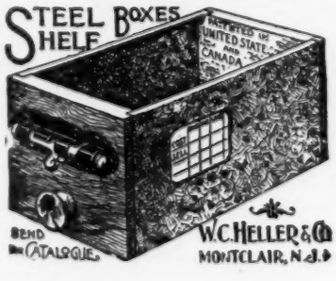

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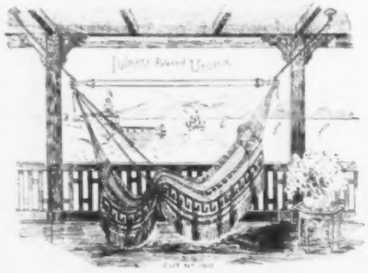

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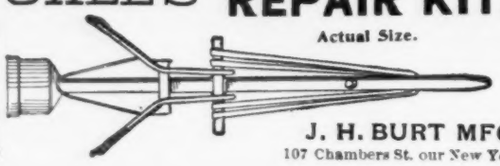

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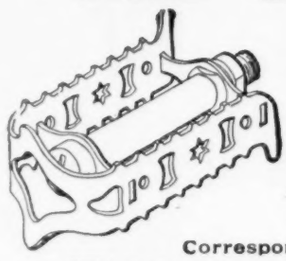

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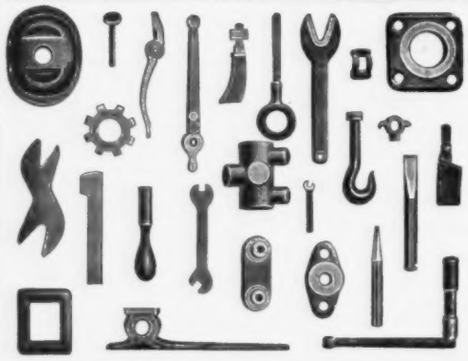

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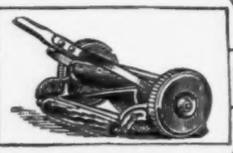

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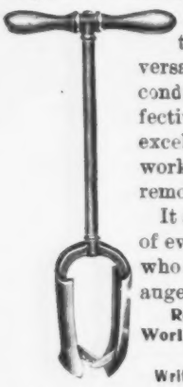

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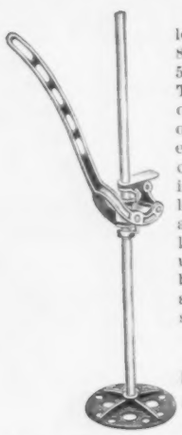

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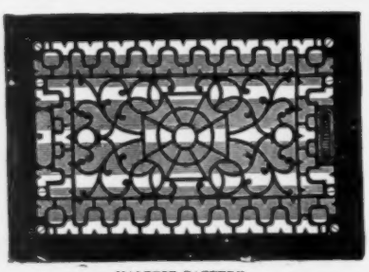

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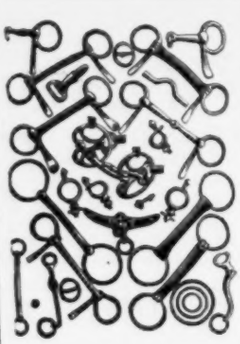

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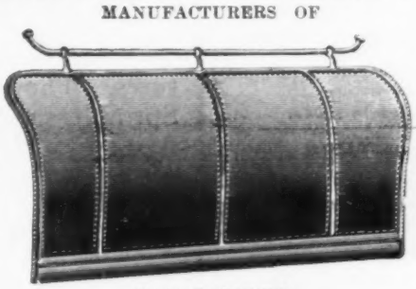

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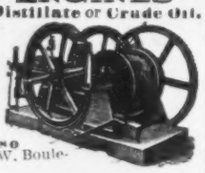

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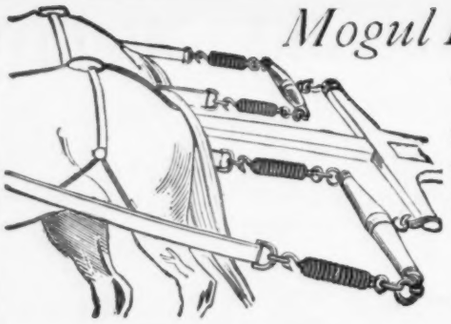

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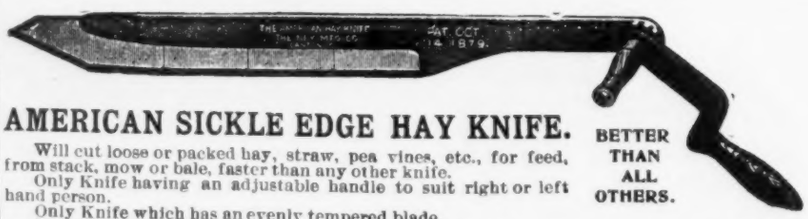

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Withington & Cooley Mfg. Co., Jackson, Mich.

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Norwalk Iron Works, S. Norwalk, Ct.
Rand Drill Co., 100 Broadway, N. Y.

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Markham Air Rifle Co., Plymouth, Mich.

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Howard & Morse, 45 Fulton, N. Y.

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Scovill Mfg. Co., Waterbury, Conn.

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Peters Cartridge Co., Cincinnati, O
Anti-Friction Metals.—*See Babbitt Metal.*

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Reading Hardware Co., Reading, Pa.

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Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
McKinnon Dash Co., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hartley & Graham, 313 & 315 Broadway, New York.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N. Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1131 Broadway, N. Y
Enterprise Foundry Co, Cincinnati, O.
Farrel Foundry & Mch. Co, Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McNeal Pipe & Foundry Co., Philadelphia, Pa
Mart n, Wm. R., Lancaster, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

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Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard Porter Sons Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Collapsible Tubes.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.
Railway Supply Co., St. Louis, Mo.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Bennett Geo. B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Spindel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crayons, Foundry.
Virginia Soapstone Slate Pencil Co., Charlotteville, Va

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J

Cupolas, Hot Blast.
Byram & Co., Detroit, Mich.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
New York Stamping Co., Brooklyn, N. Y.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.

Dampers.
Williams, A. C., Ravenna, O.

Dashes and Fenders.
McKinnon Dash Co., Buffalo, N. Y.

Decorated Tin Goods.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Machine Co., Bridgeton, N. J.
Hay-Budden Mfg Co., Brooklyn, N. Y.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Doors
Dempsey Mfg Co., Cleveland, O.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Norton Door Check & Spring Co., Boston.
Pullman Cash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Grant Mch. Tool Works, Cleveland, O.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
State Dwight Machine Co., Hartford, Ct.
Stover Novelty Works, Freeport, Ill.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Drilling Machines, Automatic.
Fifield Automatic Drilling Attachment Works, Phila., Pa.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia, R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I
Stiles & Parker Press Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg Co., Pittsburgh, Pa.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass.
Taplin Mfg. Co., Forestville, Conn.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Eriksson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamont, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa.
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
New Castle Engineering Works, Pittsburgh, Pa.
Sayler, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Fairbanks, Morse & Co., Chicago, Ill.
Fairbanks, Bros. Manufg. Co., Canton, Ohio.
Thompson, J. & Sons Mfg. Co., Beloit, Wis.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Bay State Iron Works, Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Bennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Todd, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 538-543 W. 22d Street N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exterminators, Insect.
Smith, D. B. & Co., Utica, N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fence Ratchets.
Bowen Cable Stay Fence Co., Norwalk, O

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.
Union Fence Co., De Kalb, Ill.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Metedo, E. S. & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co. Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Bendlee Wire Brush Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fruit Jar Trimmings.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Phi adelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M., Holland Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

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Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Parker, Chas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit, Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading.
Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. H. & Son, 31 Spruce St., N. Y.

Ice Picks.
Graham, John H. & Co., 113 Chambers St., N. Y.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lluenberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.

Job Lots, Hardware.
Chicago House Wrecking Co., Chicago, Ill.

Joist Hanger.
Von Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowel Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Grant Mch. Tool Works, Cleveland, O.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J. 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
U. S. Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker-Johns, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass.
Farrel Foundry & Mch. Co., Ansonia, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Fifield Automatic Drilling Attachment Works, Falls, Pa.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks, 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Poultierer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Knives.
Loyd, John, 558-562 Water St., N. Y.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Miles, F. S., Phila., Pa.
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Co., Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lowisohn Bros., 81-83 Fulton St., N. Y.

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Attachment for Lathes.
Adison Mfg. Co., Phila., Pa.

Milling Machines.
Adams Co., Dubuque Iowa.
Becker, John, Mfg. Co., Fitchburg Mass
Brown & Sharpe Mfg. Co., Providence,
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Grant Mch. Tool Works, Cleveland, O.
Lucas & Gilem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & Klog reforcating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Nail Machinery.
Atherton, Jasper Bourn, R. I.
Bates Machine Co., Joliet, Ill.
Crescent Mfg. Co., Beaver Falls, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Maltby-Henley Co., 20 Warren St., N. Y.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

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Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Johns H. W. Mfg. Co., 100 William St. N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Walter & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N. Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mf'g. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Post Hole Diggers.
Iwan Bros., Streator, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland, Ohio.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws.
Stover Novelty Works, Freeport, Ill.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Mach. Co., Bridgeton, N. J.
Manville, E. J. Mch. Co., Waterbury, Ct.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T. Mfg. Co, Hamden, Conn

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Frese our, H. C., Chicago, Ill.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co, Milwaukee, Wis.
Goulds Mfg Co, Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co, Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co, Boston, Mass.
Brasse & Co, 10 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
Mersick C. S. & Co., New Haven Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg Co., Fond du Lac, Wis
Mackinaw Refrigerator Co, 106 Chambers St., N. Y.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y

Reloading Tools.
Bridgeport Gun Implement Co., 313 315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark, N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co, Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N. Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co, 121 Worth St., N. Y.
Jones & Laughlins, Ltd, Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, C. B. Co., New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper
Thompson, Hugh L., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.
Enterprise Foundry Co., Cincinnati, O.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
American Cutlery Co., Chicago, Ill.
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Peloubet Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 53 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screw Plates.
Fairbanks Co. 311 B'way, N. Y.

Screws, *Makers of.*
Chicago Screw Co., Chicago Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co. Pawtucket,
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co, Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phoenix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co. Holyoke, Mass.
Milbradt, G. A. & Co. St. Louis Mo.
Morley Bros., Saginaw, Mich.

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Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Markle Lead Work, St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City, N. J.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N. Y

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, J. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Dunbar Bros., Bristol, Conn.
Lord Bros. Mfg. Co., Tilton, N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Seaim Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Elliptic Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Hoffman Hinge Co., Cleveland, Ohio.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.
New York Stamping Co., Brooklyn, N. Y.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids Mich
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dodgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Paste & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Paste & Seeley Co., Boston, Mass.
Reinkenheimer Co., Cincinnati, Ohio.
Watson Regulator Co., Boston, Mass.
Bennett, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
Paste & Seeley Co., Boston, Mass.
Dodson-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Keystone Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Garvin & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Talcott & Hobbs Mfg. Co., Bridgeport, Ct.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport.

Manufacturers' Agents.
O'Toole, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. F. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y

Steel Rails.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Curtis & W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Fairbank Co., 341 B'way, N. Y.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Stokers.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Cleveland, O.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stoves, Oil, Vapor & Gasoline.
Schneider & Trenkamp Co., Cleveland, O.

Structural Iron Work.
Berlin Iron Bridge Co., Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tack Claws.
Mayhew, H. H. Co., Shelburne Falls Mass.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

Tap Holder
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Besly, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Proudman Bros., Meriden, Conn.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Terne Plate.
American Tin Plate Co., Chicago, Ill.

Tin Mills.
Phillips, F. R. Sons, Phila., Pa.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo.

Tin Plate.
American Tin Plate Co., Chicago, Ill.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore

Tire Repair Outfits.
Burt, J. H. Mfg. Co., Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.

Tools.
Athol Machine Co., Athol, Mass.
Besly, C. H. & Co., Chicago, Ill.
Brown, R. H. & Co., New Haven, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls, Millers Falls Co., 93 Reade, N. Y.
Scholhorn, Wm. Co., New Haven, Conn
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
Stevens J., Arms & Tool Co., Chicopee.

Tools, Blacksmith and Wheelwright.
Butts & Ordway Co., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg. Co., Greenfield Mass.

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Schneider & Trenkamp Co., Cleveland, O.

Tote Boxes.
Clark, W. J. & Co. Salem, O

Trimmer Guards.
Stimpson, Edward, & Son, 31 Spruce St., N. Y.

Trowels.
Bishop, Geo. H. & Co., Cincinnati, O.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.

Trucks.
Boston & Lockport Block Co., Lockport.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N. Y

Tube Cutters.
Groves & Baines, Philadelphia, Pa.

Tubes, Seamless Drawn Copper, Brass and Bronze.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phoenix Tube Co., Brooklyn, N. Y.

Tubing, Steel.
Leng's, John S. Son & Co., 4 Fletcher St.
National Tube Wks. Co., McKeesport, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
Wilmot & Hobbs Mfg. Co., Bridgeport.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills.
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.

Upholsterers' Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Turner & Seymour Mfg. Co., Torrington.

Valves, Gas, Water and Steam.
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
Crosby Steam Gage & Valve Co., Boston.
Eastwood Wire Mfg. Co., Belleville, N. J.
Jenkins Bros., 71 John, N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
Wood, R. D. & Co., Philadelphia, Pa.

Vehicles.
Parry Mfg. Co., Indianapolis, Ind.

Ventilating Fans.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton St., N. Y.

Vises.
Athol Machine Co., Athol, Mass.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
Lewis Tool Co., 44 Barclay St., N. Y.
Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks.
Anderson Pole & Shaft Co., Anderson, Ind.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Kane Bros. Co., Poughkeepsie N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn

Washers.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson & Smith, Worcester, Mass.

Washing Machines.
Brammer, H. F. Mfg. Co., Davenport, Ia.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weaners
Carroll Muzzle Co., Carroll, Iowa.

Well Auger.
Iwan Bros., Streator, Ill.

Well Supplies.
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Wind Mills.
Flint & Walling Co., Kendallville, Ind.

Window Cord.
Samson Cordage Works, Boston, Mass.

Window Fasteners.
Stanley Works, New Britain, Conn.

Window Stops.
Taplin Mfg. Co., Forestville, Ct.

Wire.
Dillon-Griswold Wire Co., Sterling, Ill.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey Wire Works Co., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ludlow Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.
Scholhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wire Dies.
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Wire Drawing Machinery.
Morgan Construction Co., Worcester, Massberg & Granville Mfg. Co., Providence, R. I.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods.
Brooks, M. S. & Sons, Chester, Conn.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hendee Wire Brush Co., Milwaukee, Wis.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

Wire Forming Machinery.
American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.
Shuster, F. B. Co., New Haven, Conn.

Wire Nails.
American Steel & Wire Co., Chicago, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Pittsburgh Wire Co., Pittsburgh, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton.
Whitney, A. R. & Co., 29 Broadway, N. Y.

Wire Nail Machinery.
Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

Wire Parts.
Jenkinson, R. C. & Co., Newark, N. J.

Wire Rods, Steel.
American Steel & Wire Co., Chicago, Ill.
Pittsburgh Wire Co., Pittsburgh, Pa.
Washburn & Moen Mfg. Co., Worcester, Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel.
Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati O.

Wire Straightening and Cutting Machinery.
Shuster, F. B. Co., New Haven, Conn.

Wood Screw Machinery.
Cook, Asa S. & Co., Hartford, Ct.

Wood Working Machinery
Defiance Machine Works, Defiance, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

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Bemis & Call Hdw. & Tool Co., Springfield, Mass.
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Coes Wrench Co., Worcester, Mass.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Keystone Drop Forge Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Star Mfg. Co., Carpentersville, Ill.
Williams, J. H. & Co., Brooklyn, N. Y.

Zinc Nails.
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Zinc Plates.
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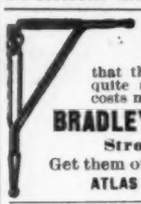

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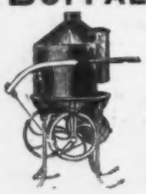
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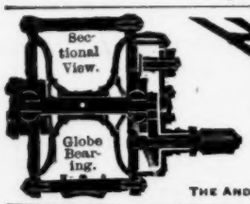

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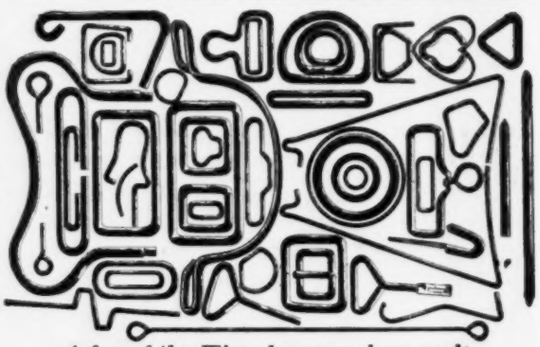

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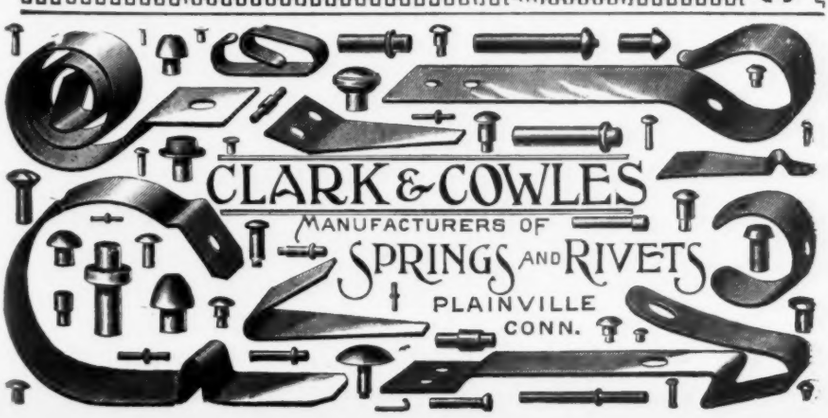

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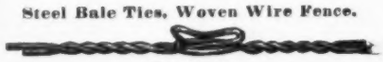

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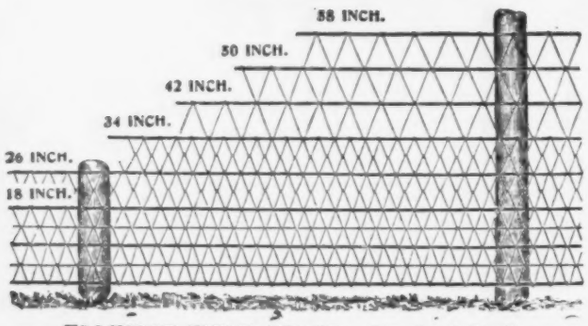

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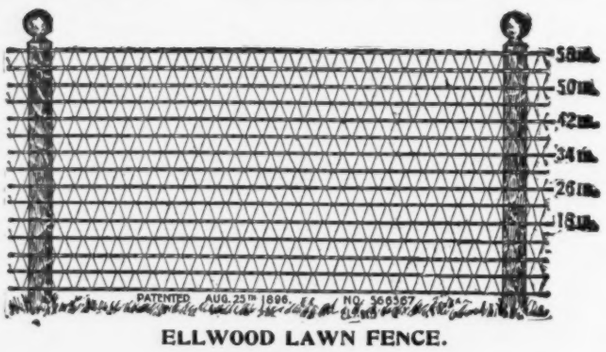

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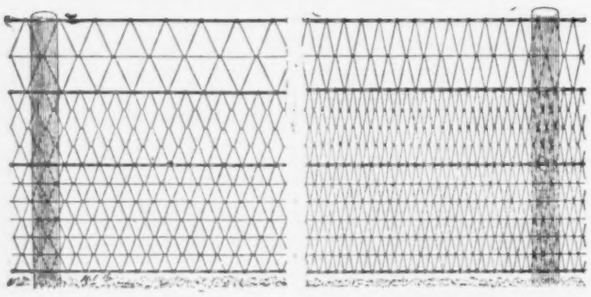

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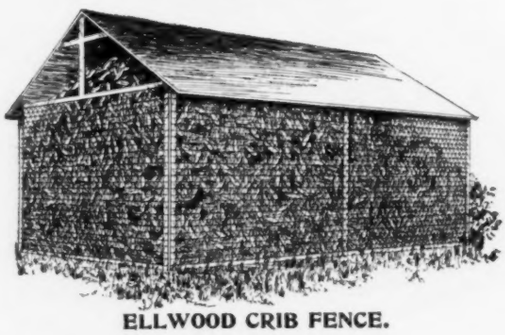

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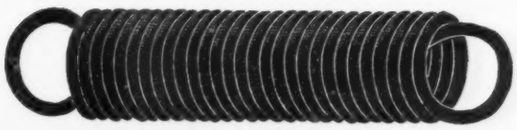

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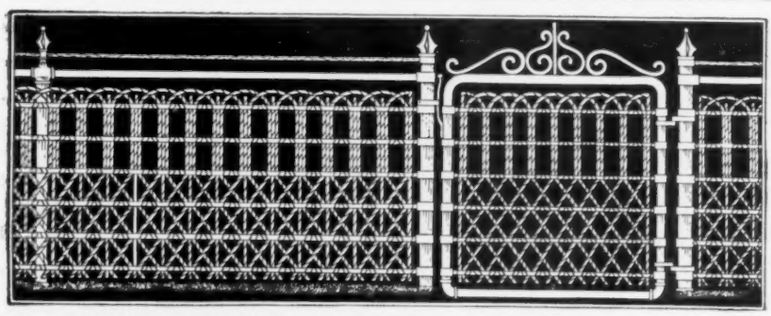

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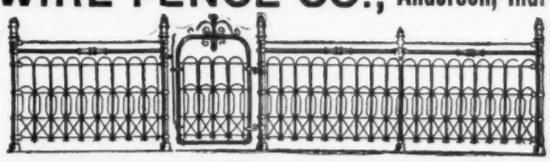

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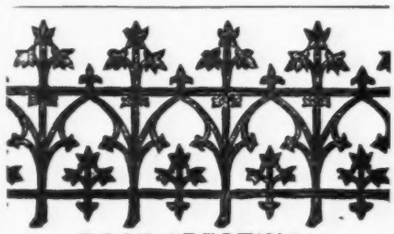

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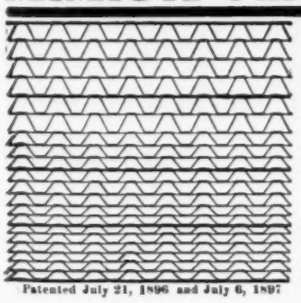

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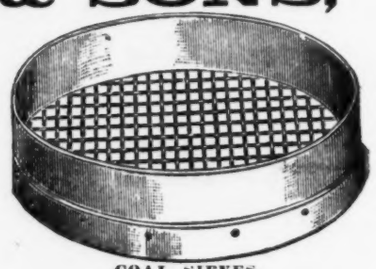

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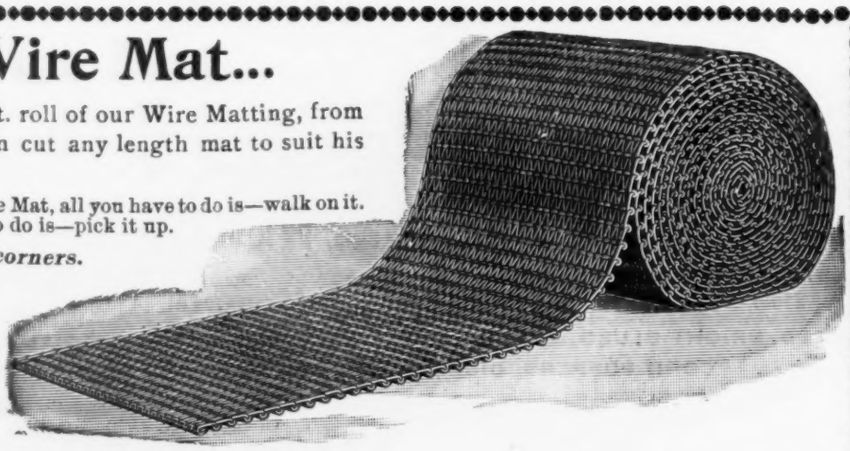

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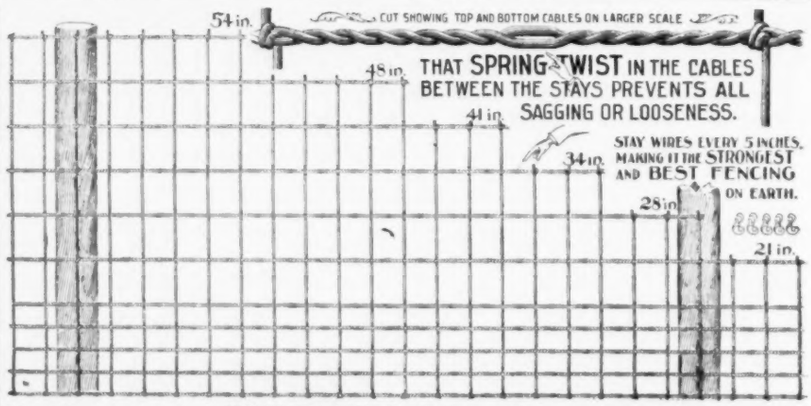

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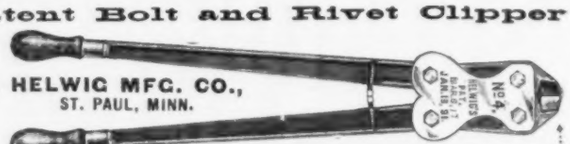

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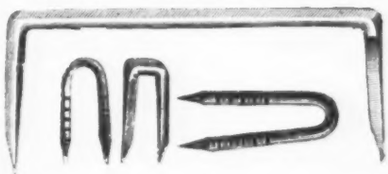

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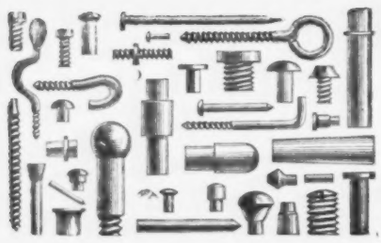

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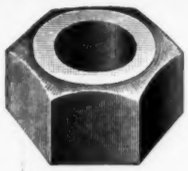

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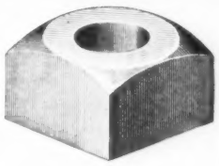

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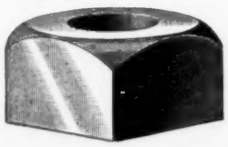

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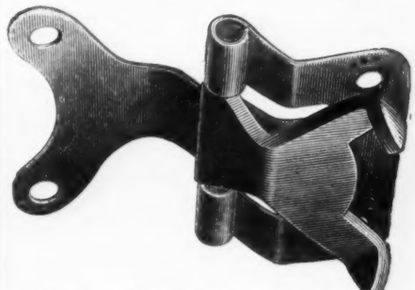

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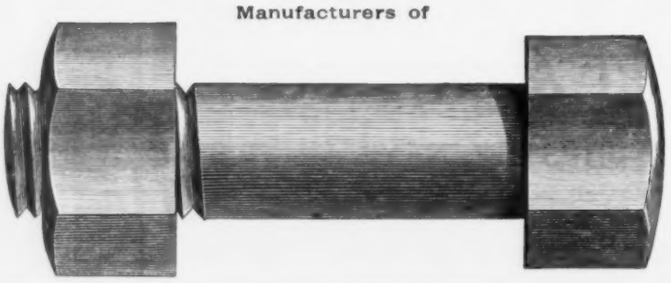

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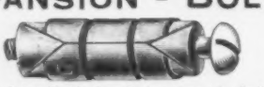

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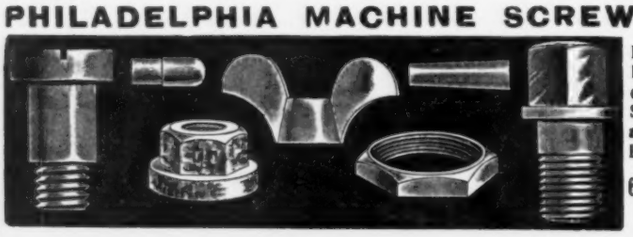

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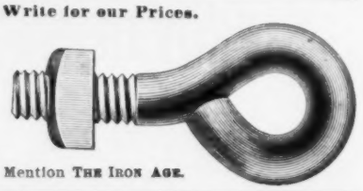

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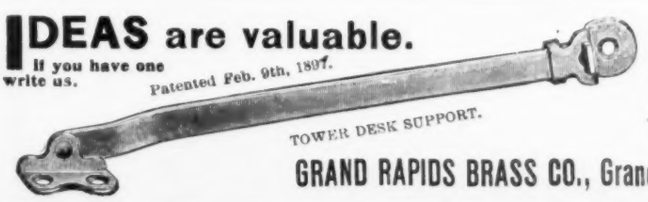

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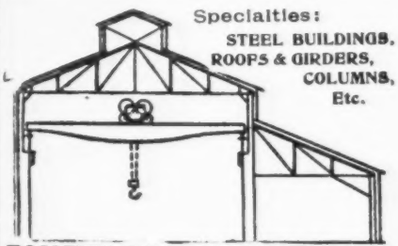

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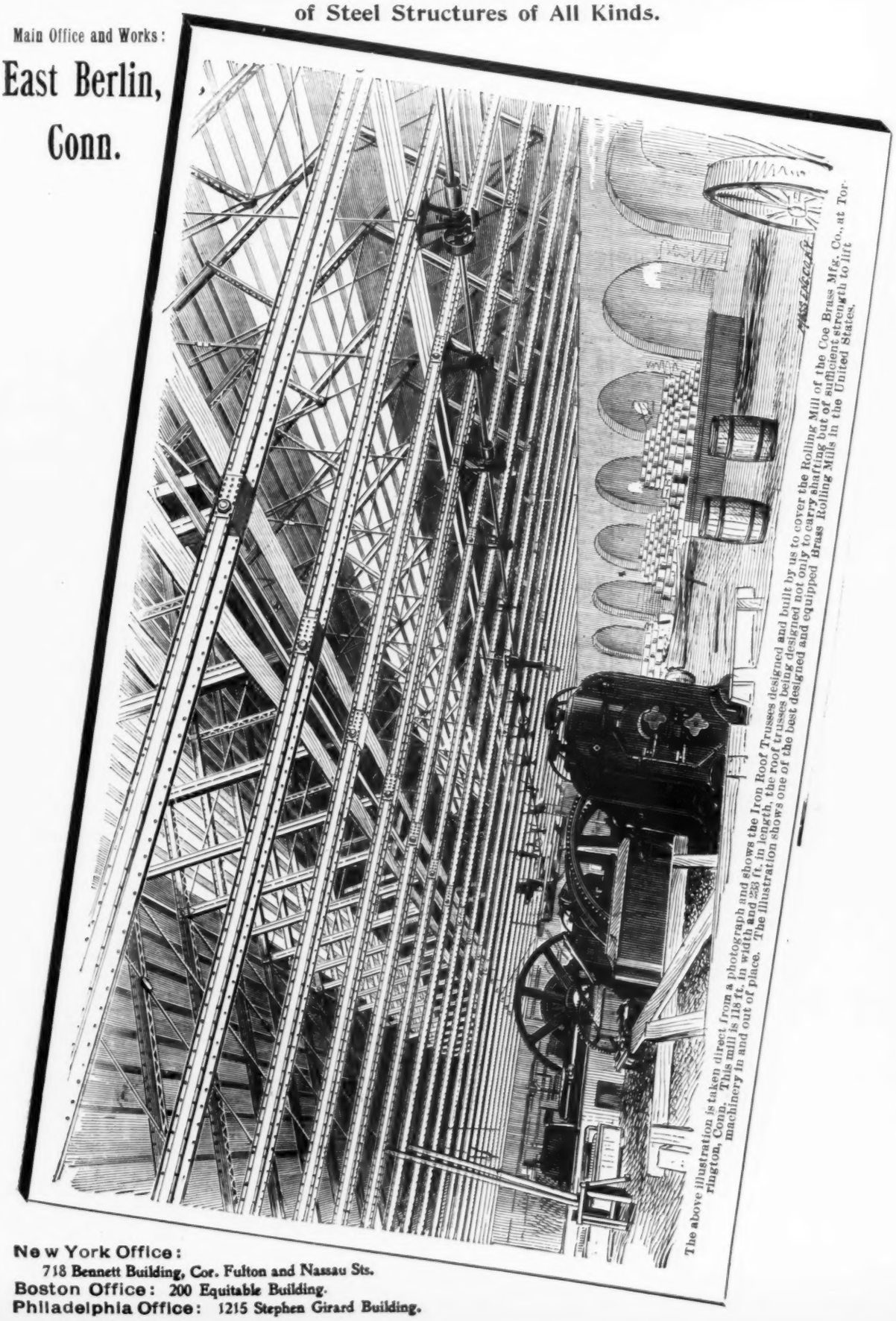

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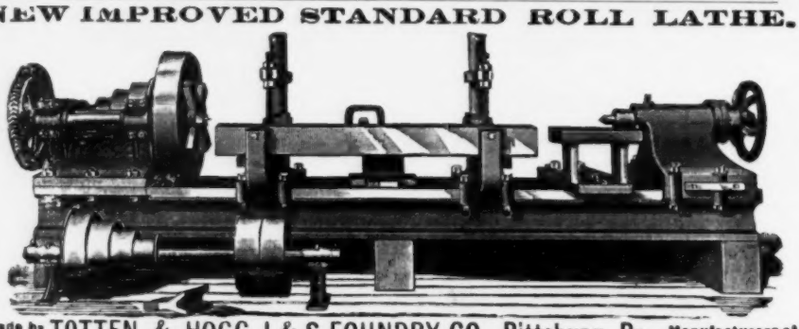

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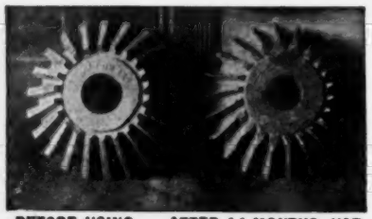

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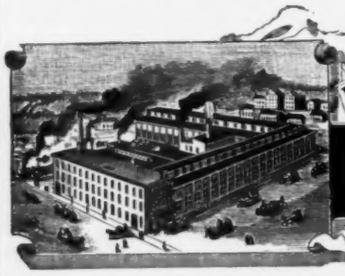

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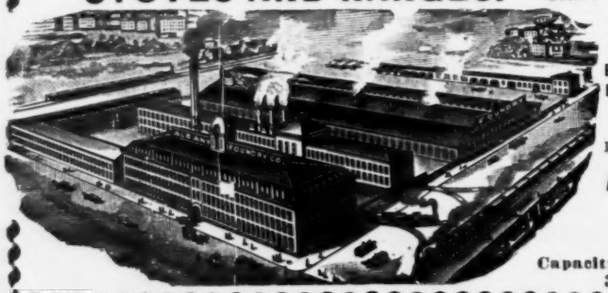

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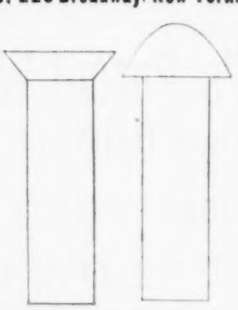

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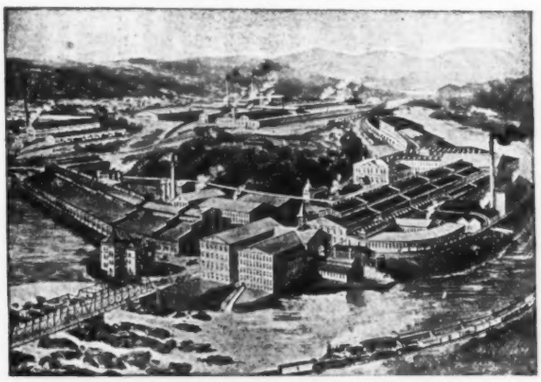

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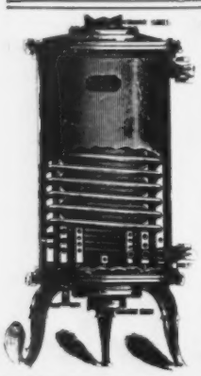

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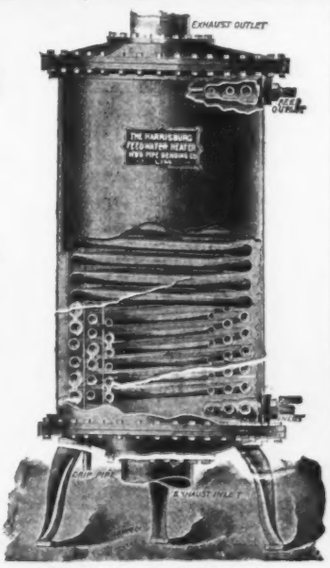

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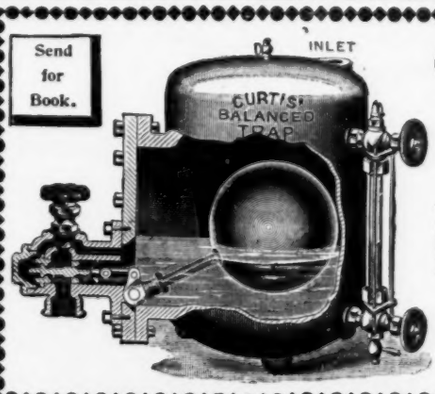

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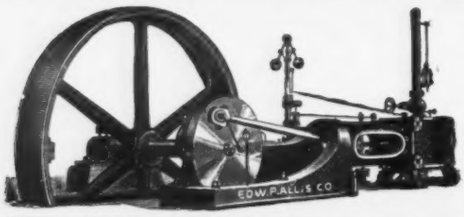

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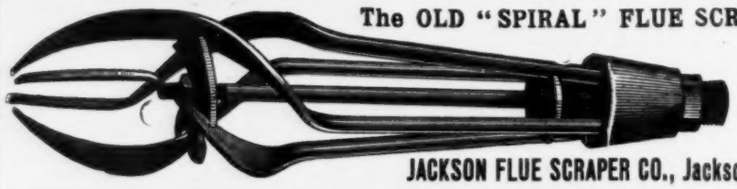

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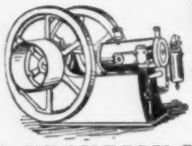

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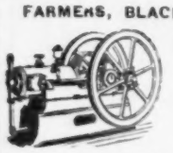

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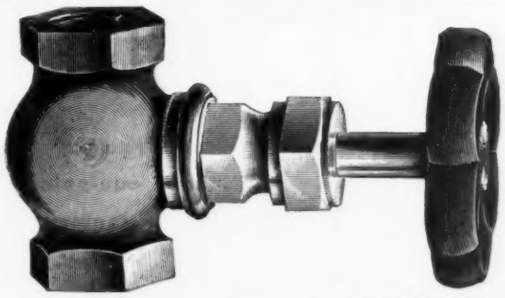

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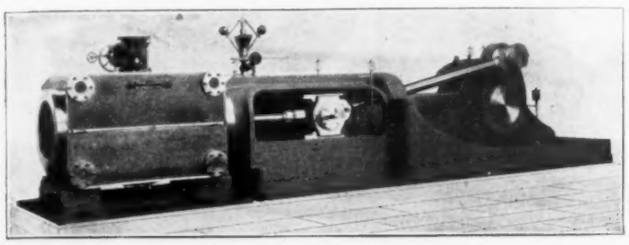

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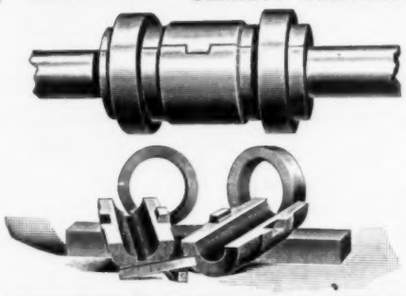

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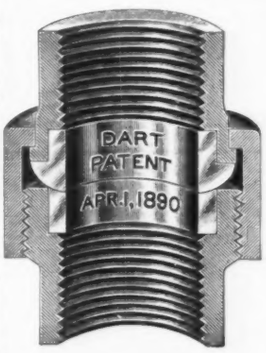

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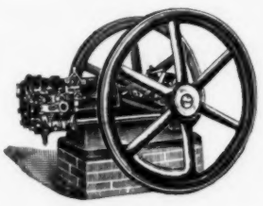

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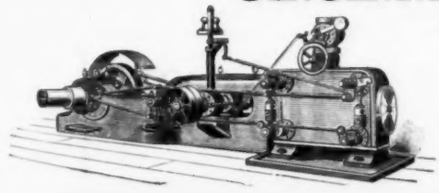

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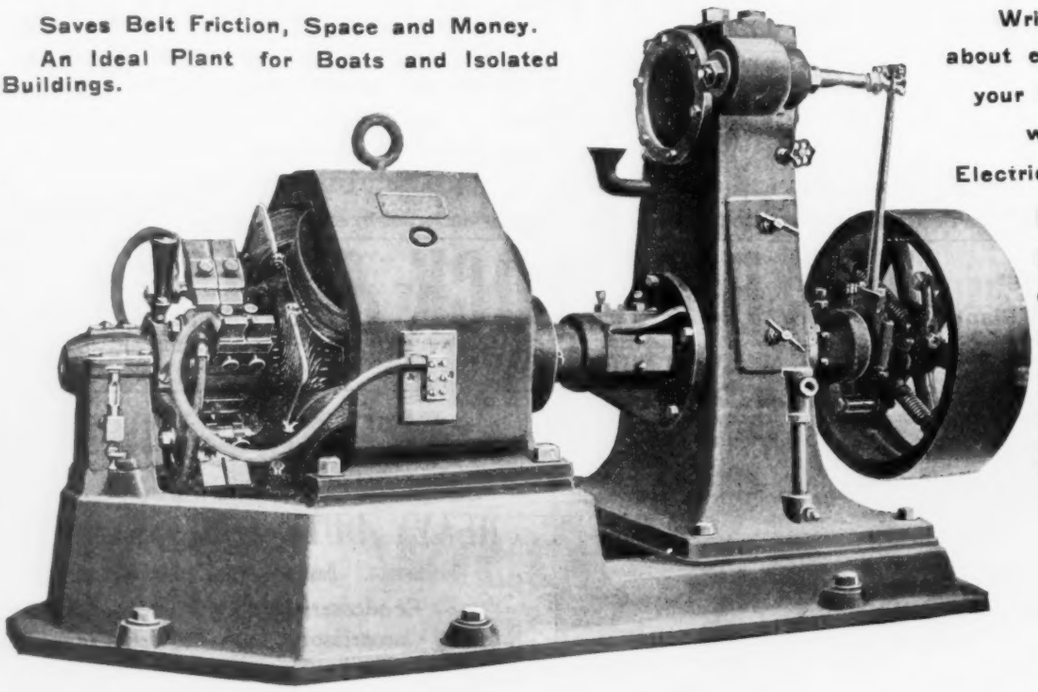

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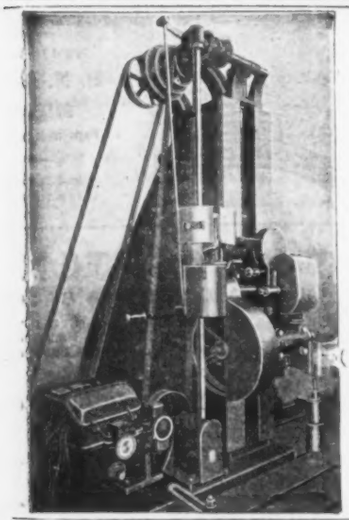

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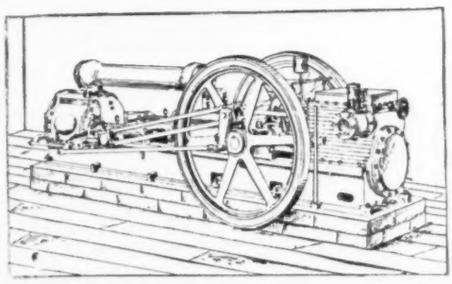

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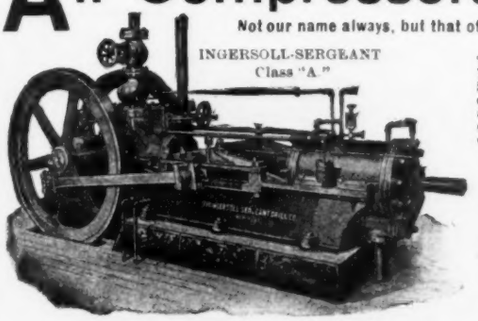

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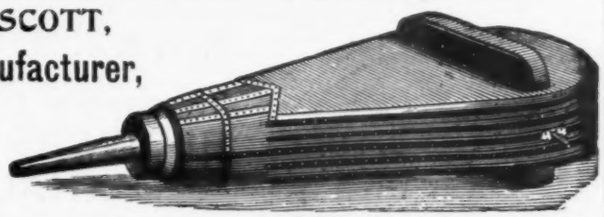

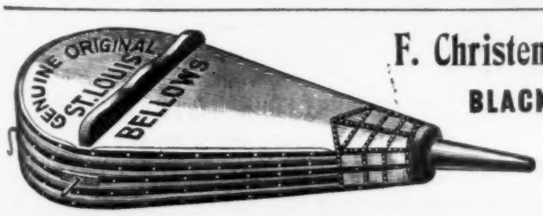

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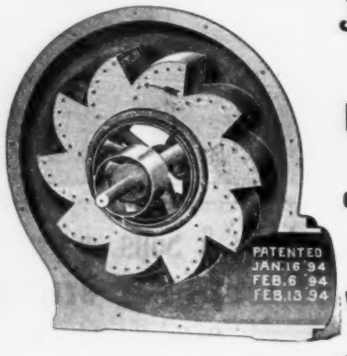

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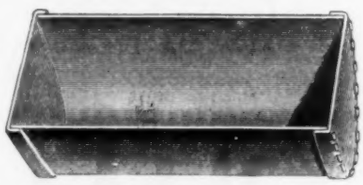

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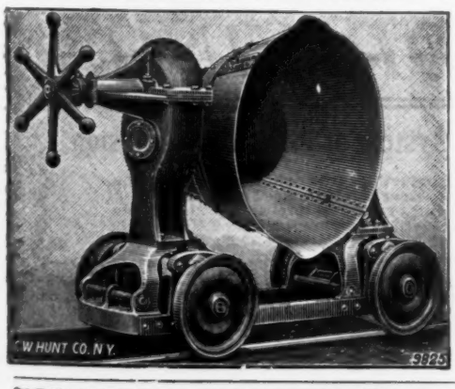

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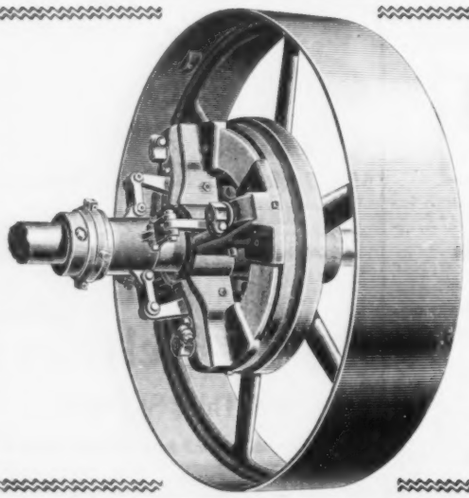

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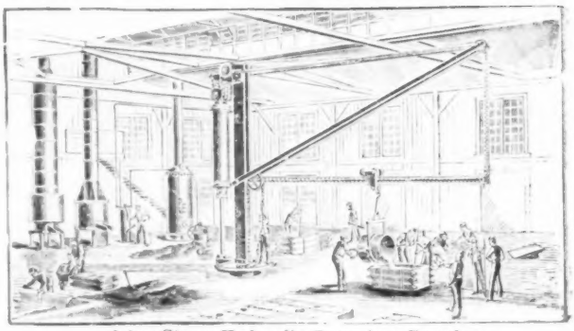

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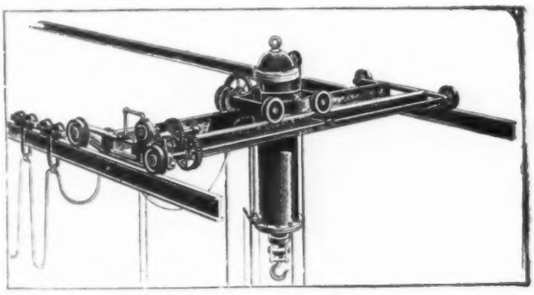

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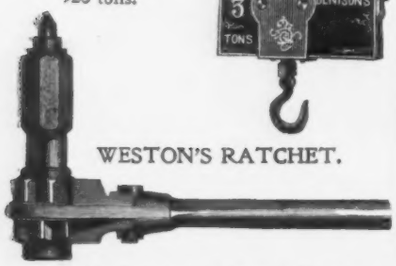

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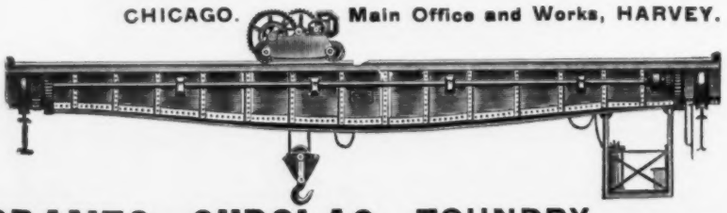

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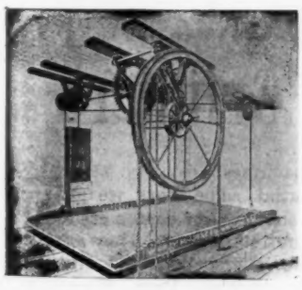

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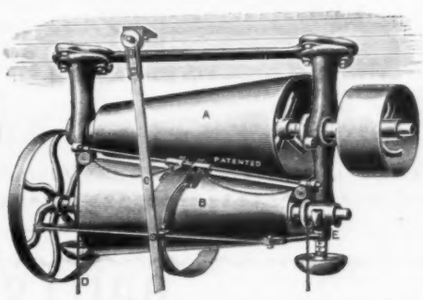

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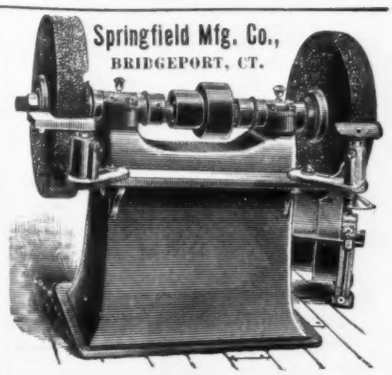

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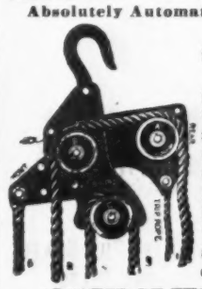

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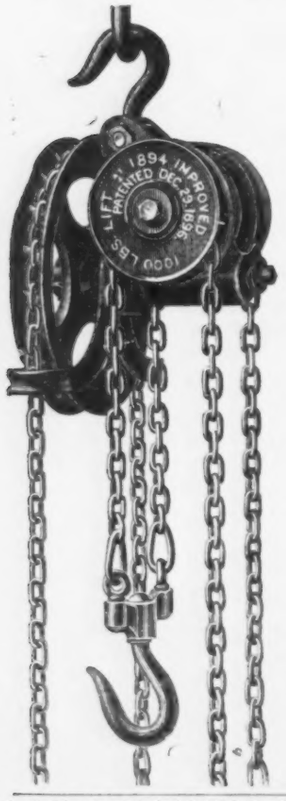

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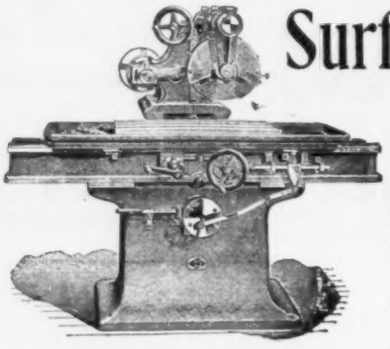

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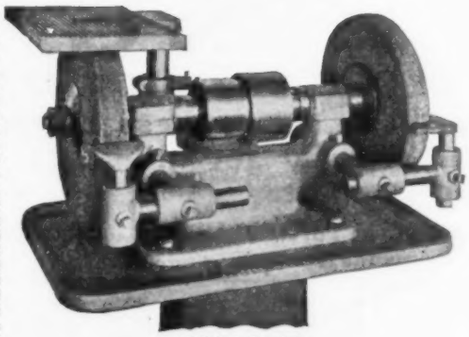

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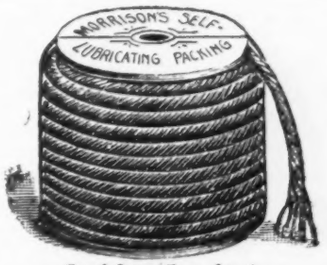

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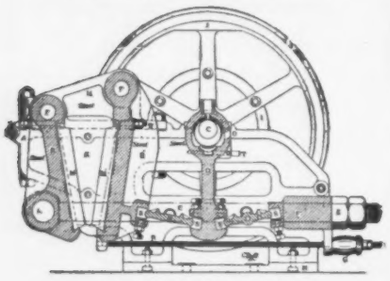

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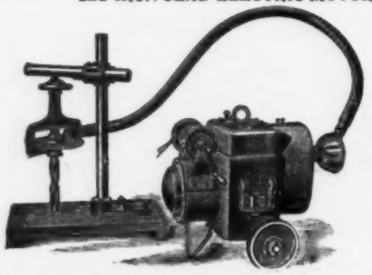

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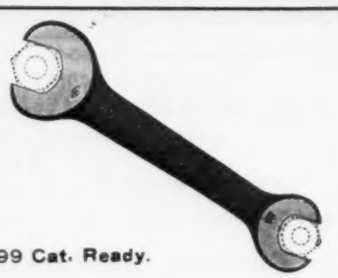

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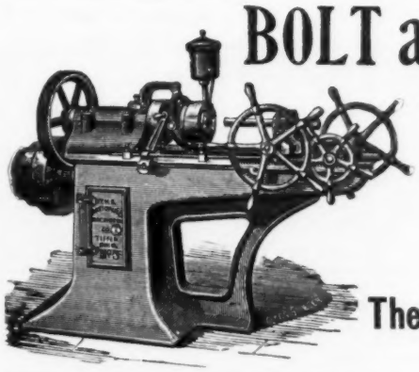

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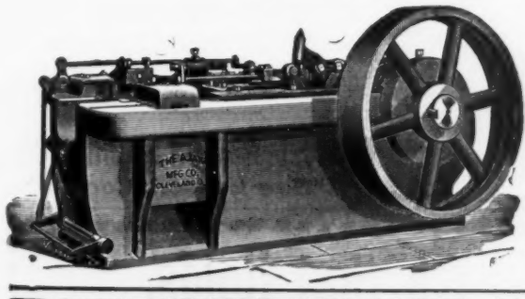

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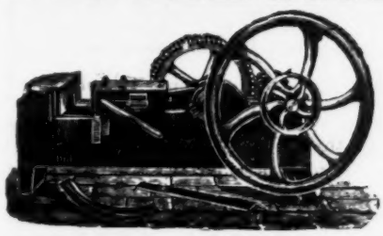

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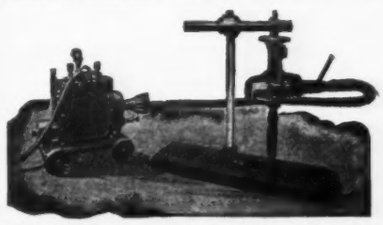

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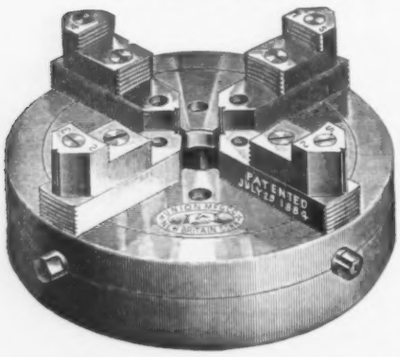

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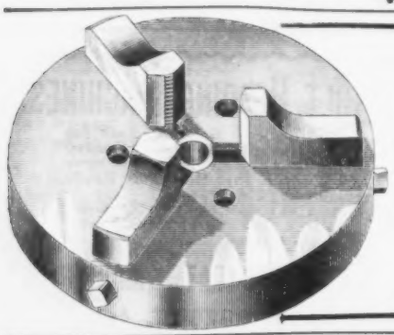

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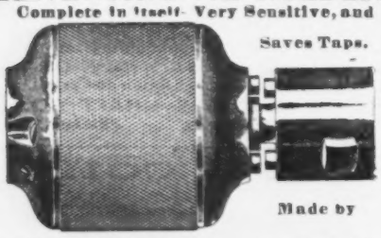

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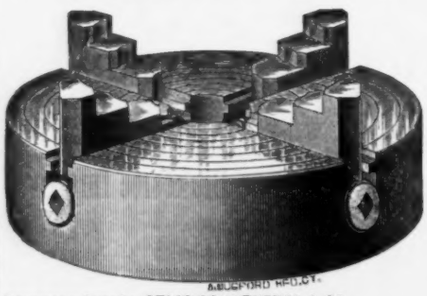

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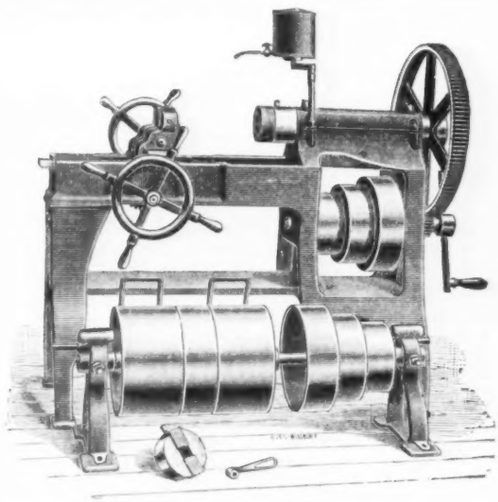

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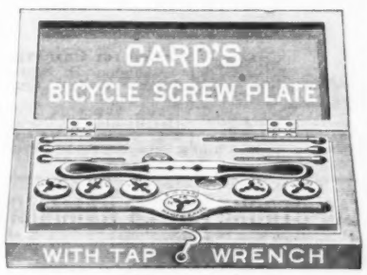

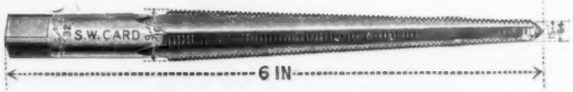

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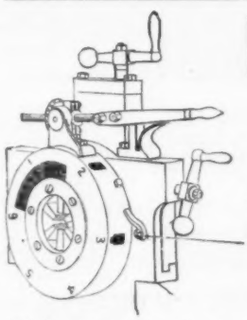

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have a Die Mechanism Proven Quick, Accurate, Economical.

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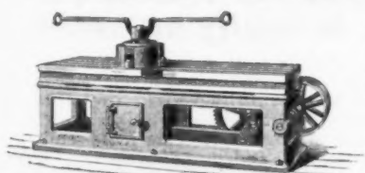

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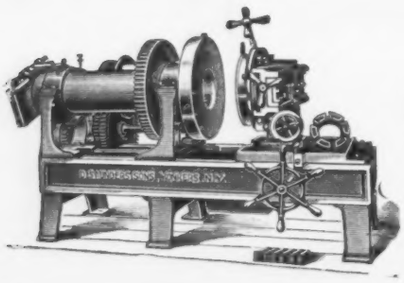

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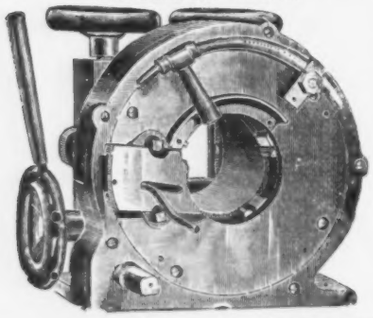

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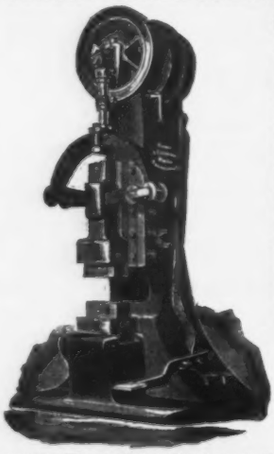

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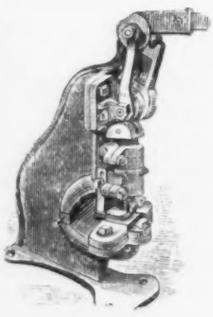

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SHEARS.

Hydraulic { PRESSES, PUMPS, ACCUMULATORS, JACKS, ETC.

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Maker and Patentee of the Improved

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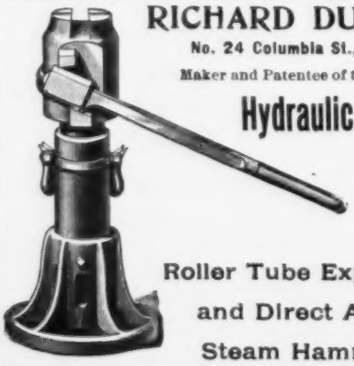

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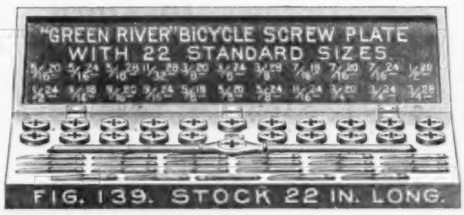

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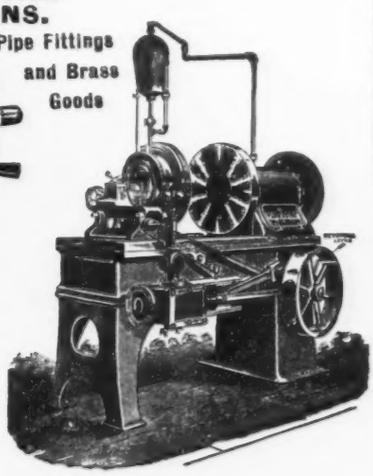

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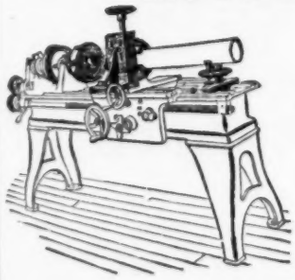

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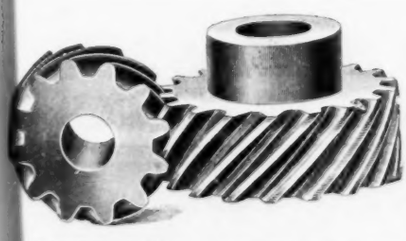

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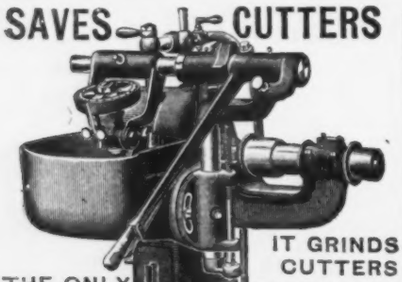

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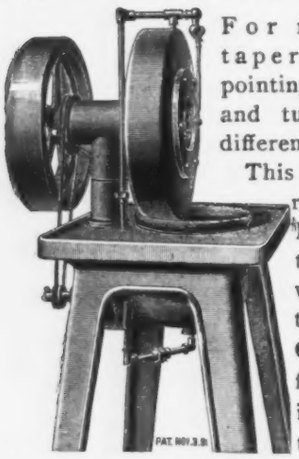

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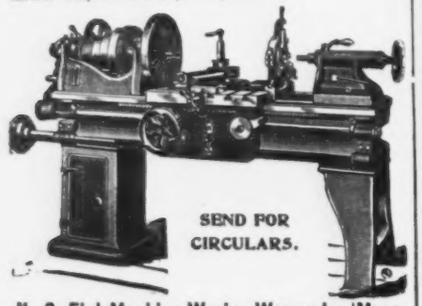

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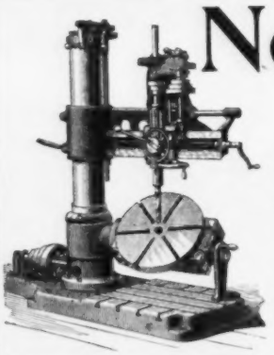

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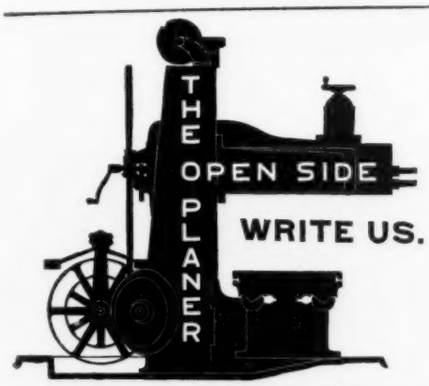

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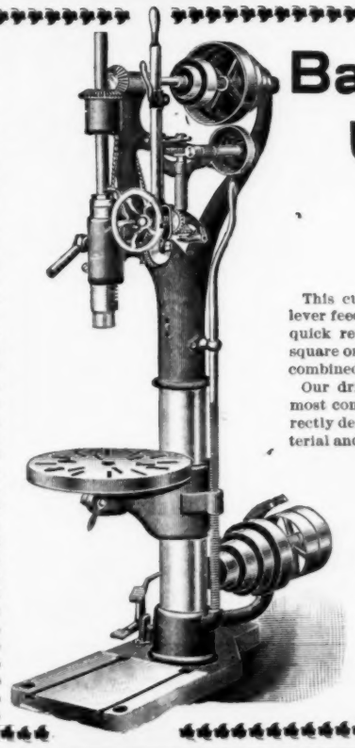

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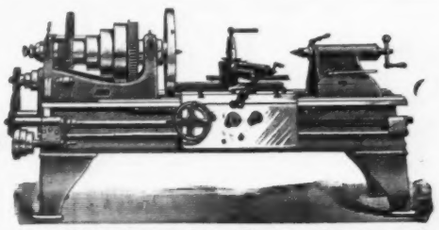

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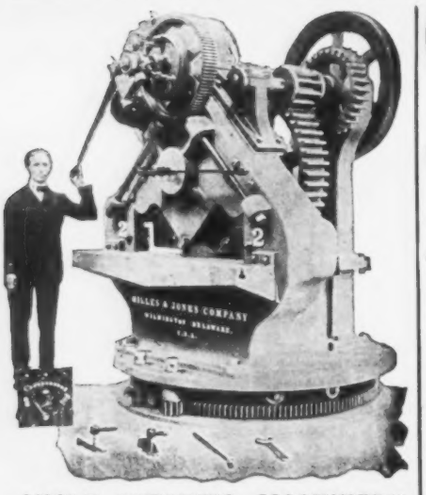

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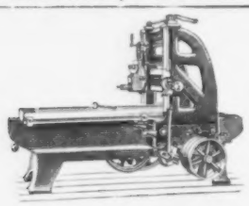

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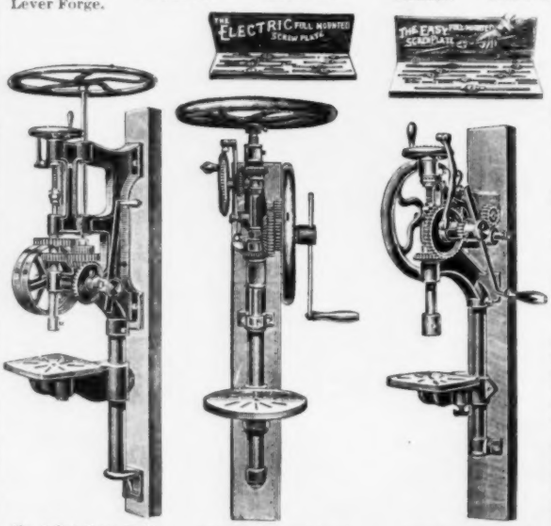

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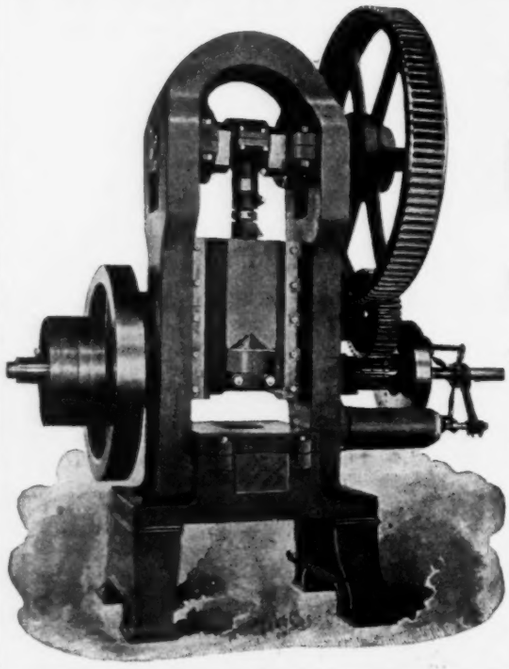

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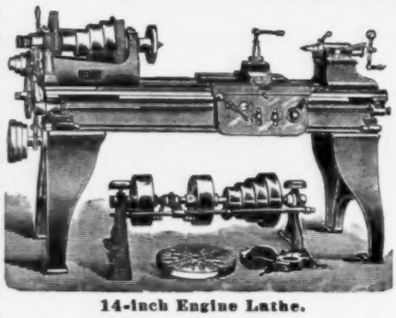

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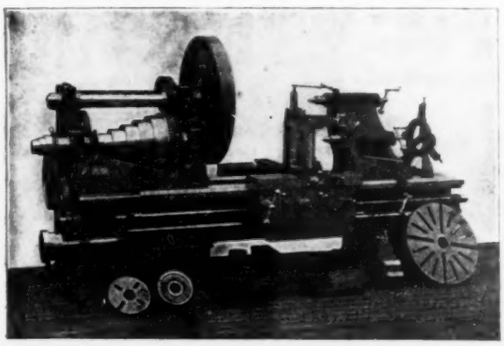

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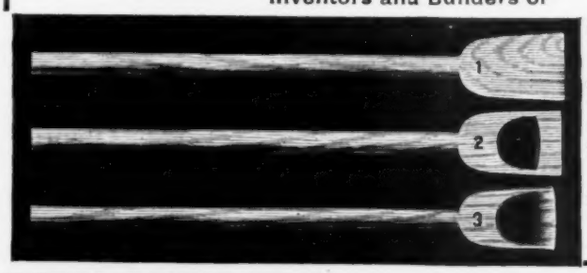

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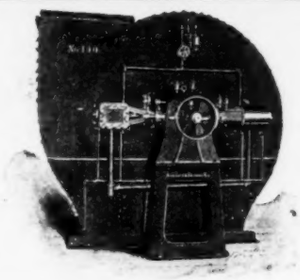

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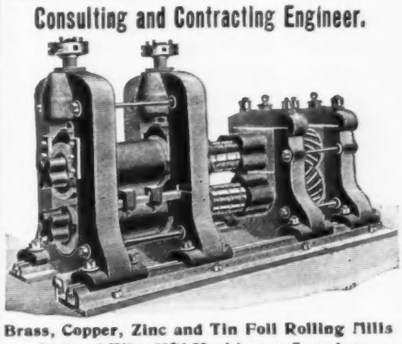

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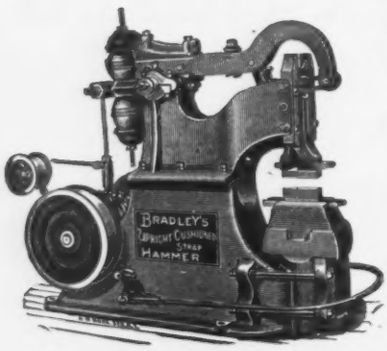

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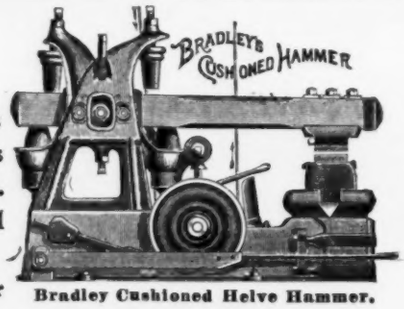

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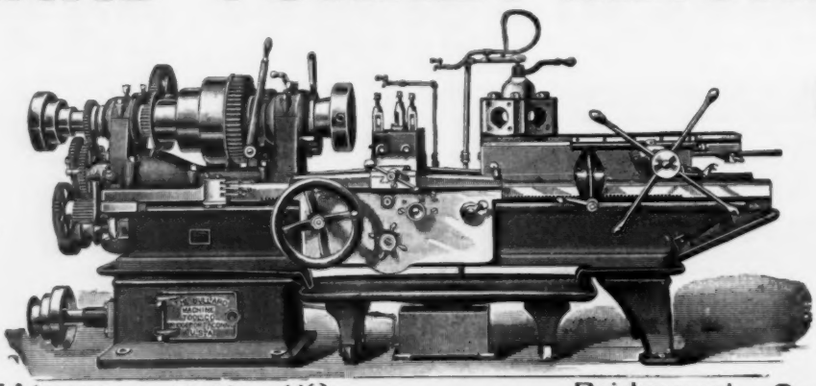

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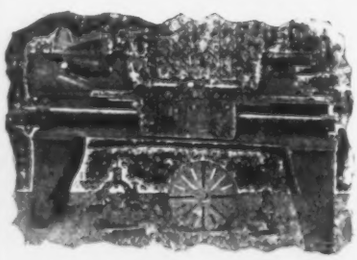

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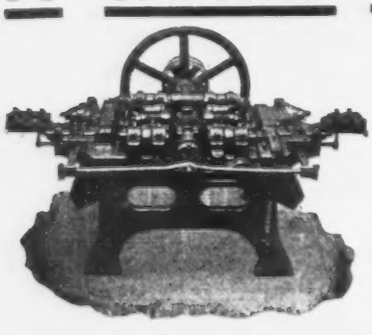

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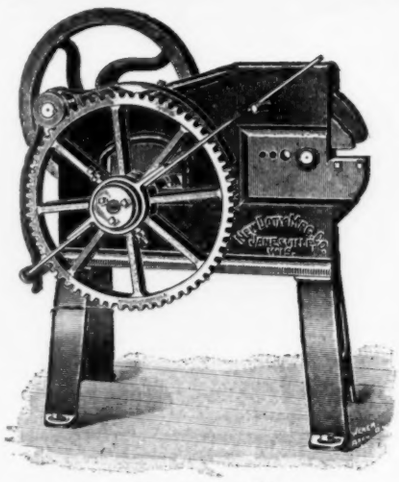

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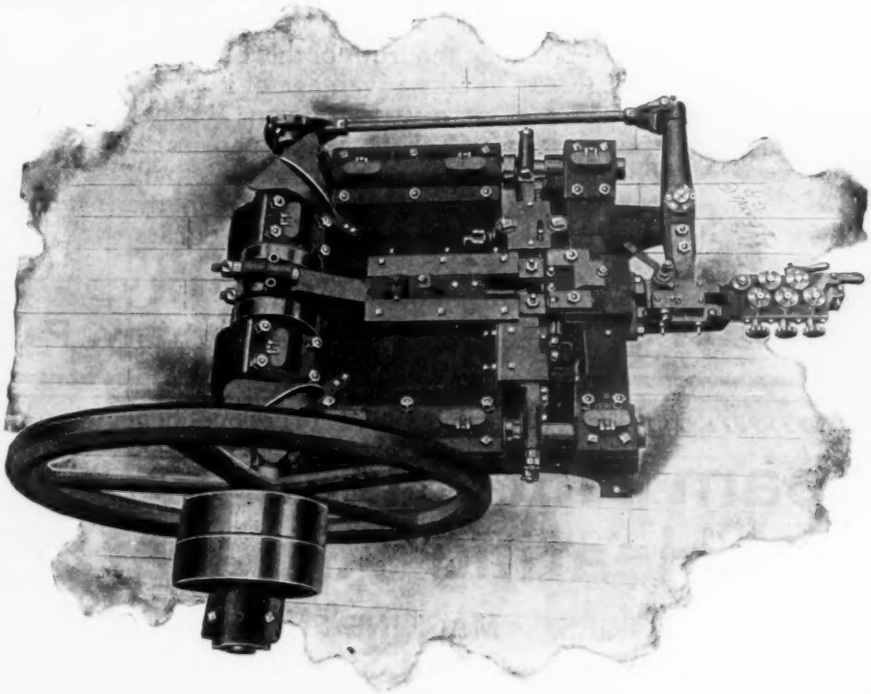

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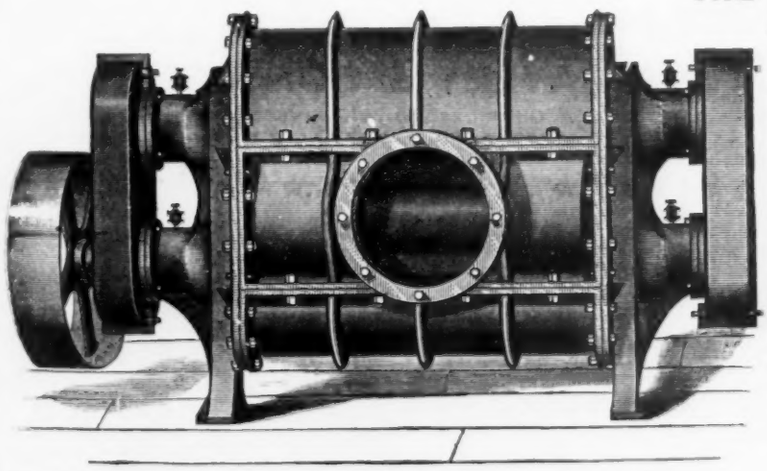

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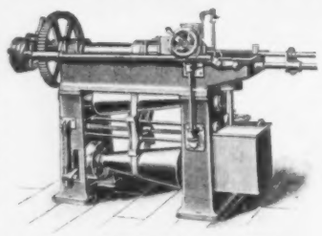

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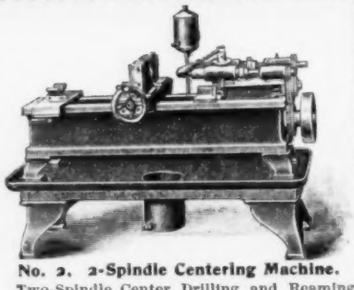

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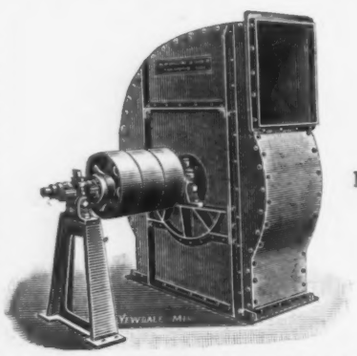

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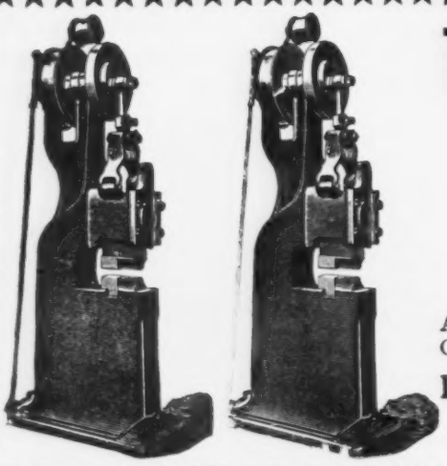

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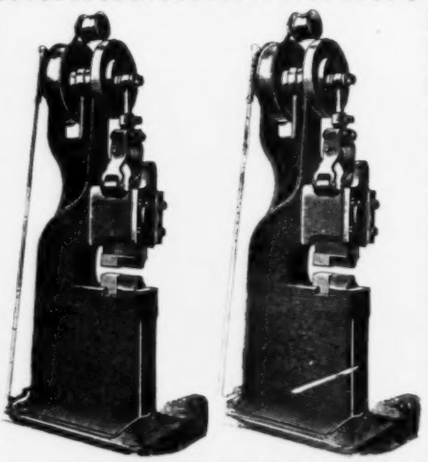

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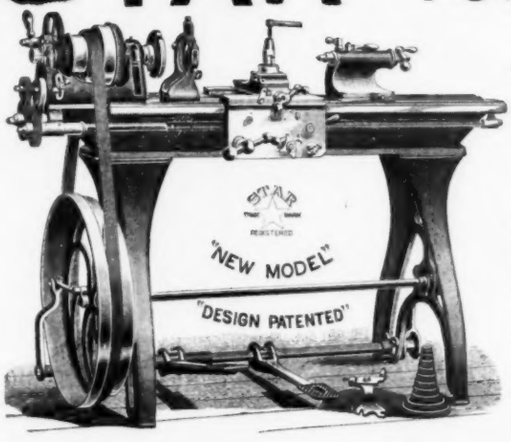

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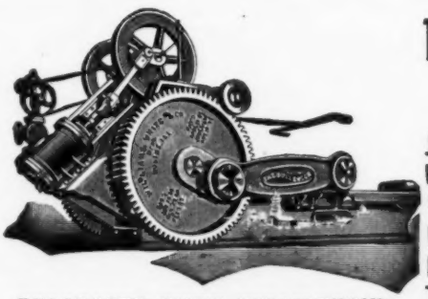

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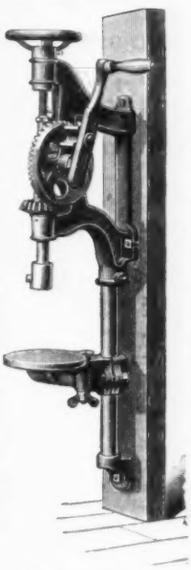

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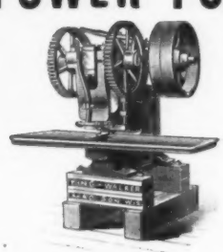

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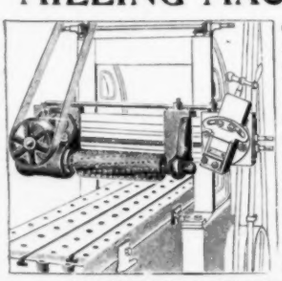

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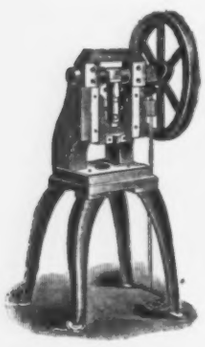

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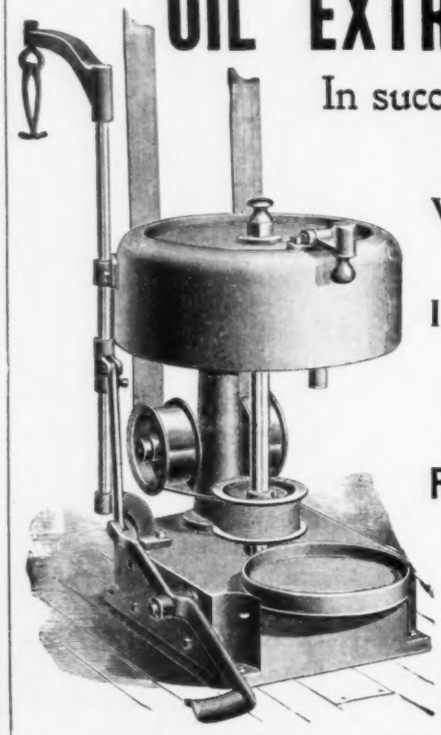

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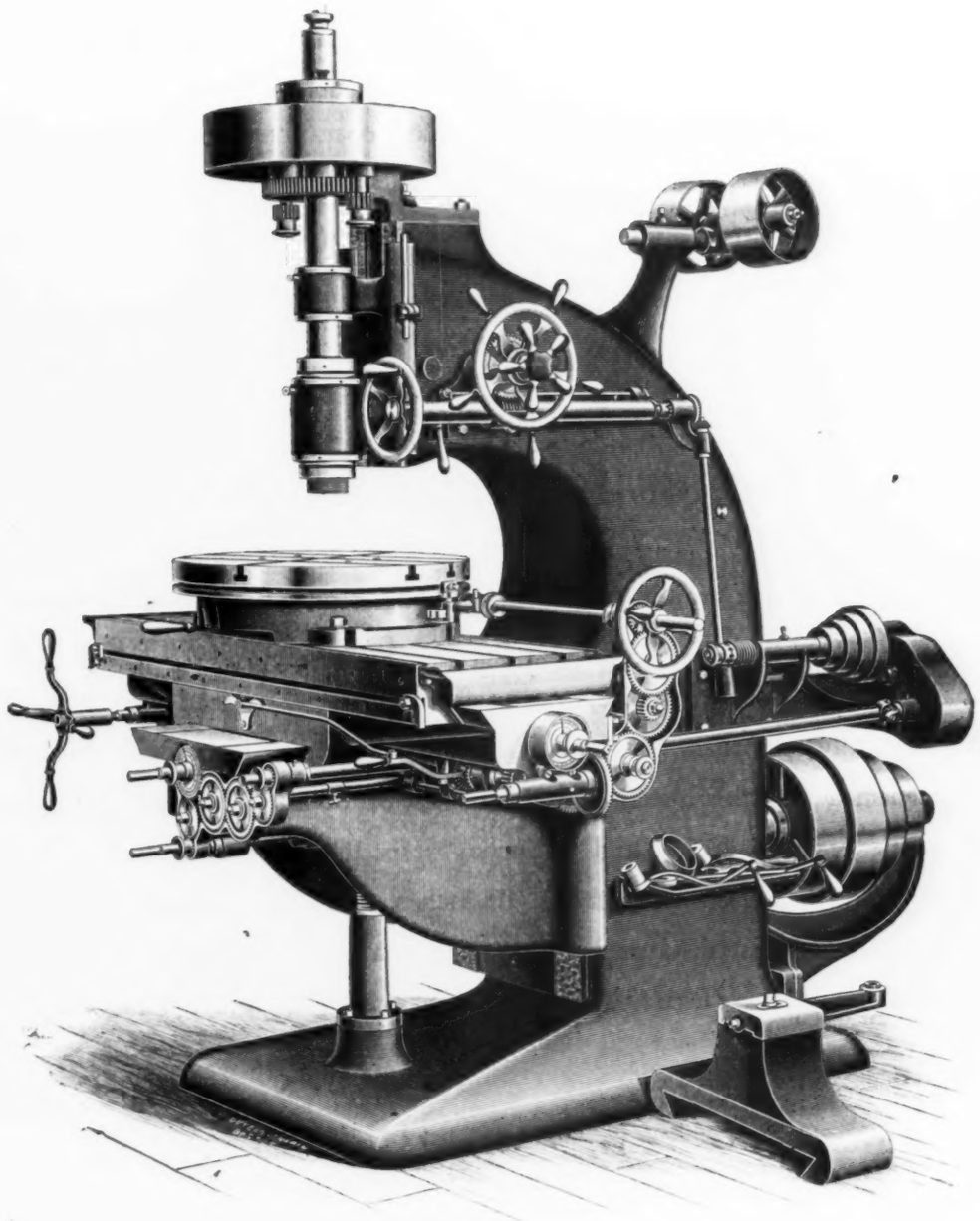
Its value is proved by continued use and increasing sales.

SMOOTH ON MFG. CO.,
551 Communipaw Ave., Jersey City, N. J.
Vreeland Tompkins, B. S., Chemist & Mgr.,
Tel. 81 A, Bergen.

The Latest Becker No. 6 Miller.



. . . Manufactured by . . .

John Becker Mfg. Company,

Fitchburg, Mass., U. S. A.

(See Other Side of this Sheet.)

This leaf is a circular. It contains, on the other side, a full description of this machine, and is intended to be cut out (Cut on This Line) and filed away for future reference.

See picture on other side, of the

Becker Miller No. 6.

This machine is built for extra heavy milling operations and for Locomotive and Railroad shops, and is especially adapted to Ship Yard, Navy Yard and Arsenal work. Great general Utility and extreme Accuracy are its special strong points.

General Specifications.

The Spindle is back geared 6 to 1; runs in long, bronze bearings, made adjustable. Diameter of main bearing 3¾ inches. Size of hole No. 13, Brown & Sharpe taper. Tools are held by means of draw-bar. The head has automatic feed vertically 12 inches, with quick return and automatic stop dogs. Platens are furnished with this machine, in three sizes, 52, 60 and 72 inches in length; automatic feeds of 40, 50 and 62 inches respectively, right and left hand. Knee has vertical feed (automatic), 18 inches. Saddle has in and out feed, 20 inches. Greatest distance between main platen and spindle, 24 inches. Countershaft has three friction pulleys. Weight from 7,000 to 8,000 pounds, net.

For further particulars, write to

John Becker Manufacturing Co.,

Fitchburg, Mass.,

Or to Schuchardt & Schutte, Berlin, Vienna and Brussels.
Roux, Freres & Company, Paris, France.
Selig, Sonnenthal & Company, London, England.

Domestic Agents—Hill, Clarke & Company, Boston, Chicago.
U. Baird Machinery Company, Pittsburgh, Pa.
J. W. Cregar, The Bourse, Philadelphia, Pa.

(*See other side.*)

ROD and FLAT MILLS

WITH ROLLER BEARINGS

FOR ALL PURPOSES.

Drop and Power Presses, Wire Drawing Machinery.

Mossberg & Granville Mfg. Co.,

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CHARLES CHURCHILL & Co., Ltd., London and Birmingham, England.
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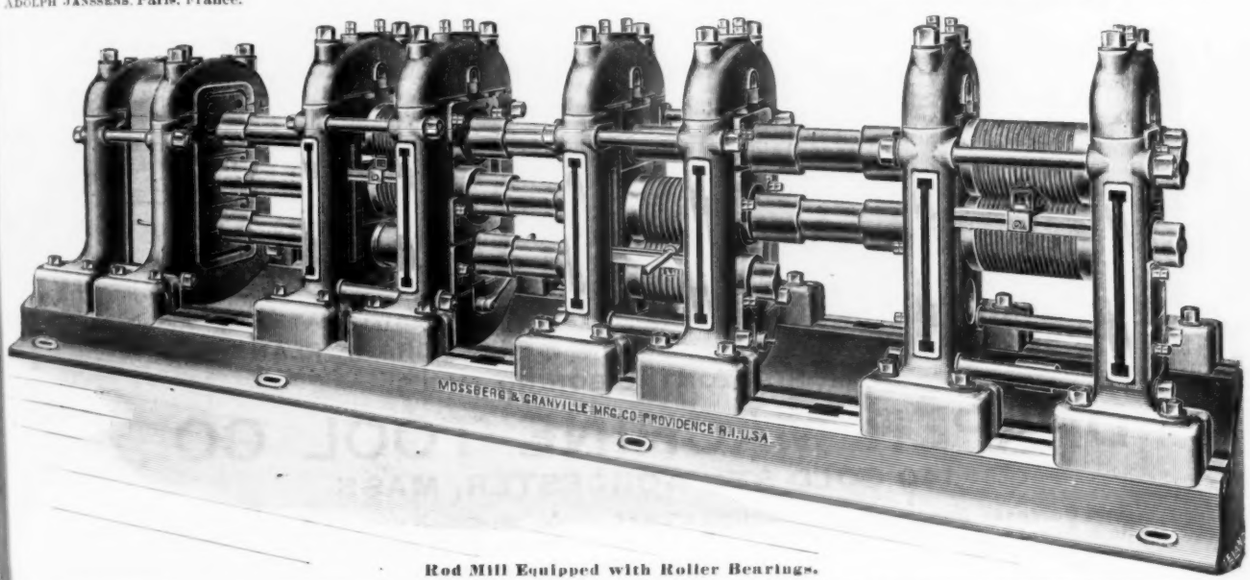
Providence, R. I.

New York Office,
126 LIBERTY ST.
Exhibition at Philadelphia Bourse.



Rod Mill Equipped with Roller Bearings.

The "Cincinnati" Miller,

Getting a

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Our Miller is attaining a world wide reputation for ***Accuracy,*** for being a ***bigger producer*** of good work than any other miller. Has a wide range of feeds, automatic, all levers are conveniently located.

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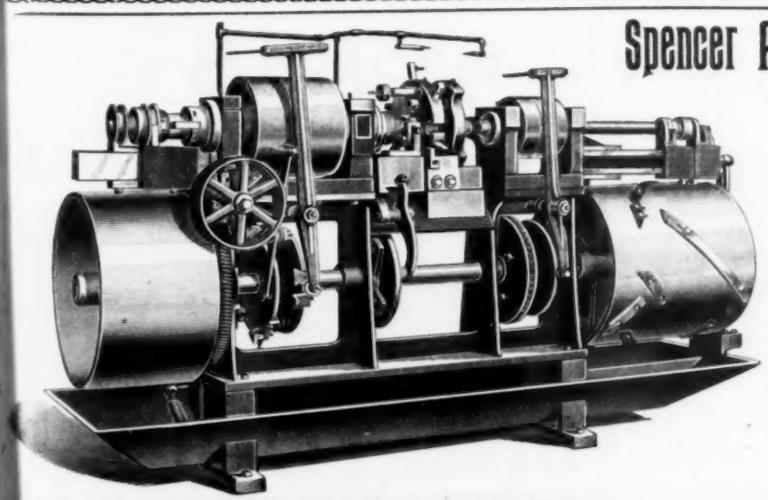


SPENCER DOUBLE TURRET NO. 3.

Spencer Automatic Machine Screw Co.,

HARTFORD, CONN., U. S. A.

We build automatic screw machines in three sizes and two styles.

We have each of these sizes and styles in stock, and can therefore guarantee prompt delivery.

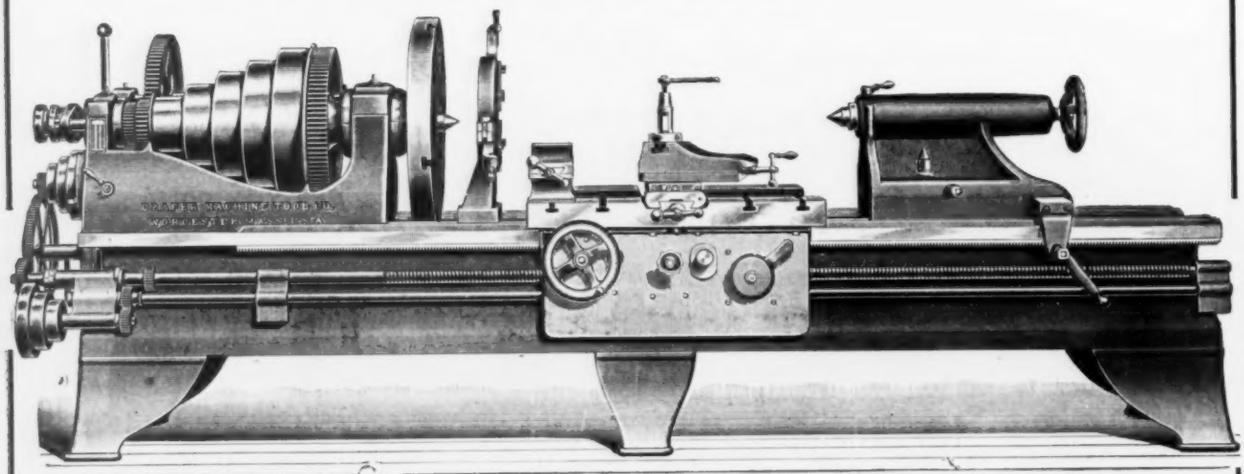
We shall be pleased to mail a catalogue to any address. In our catalogue you will find complete descriptions and illustrations.

We can also mail samples of work which we are daily turning out on these machines at our own works.

If you are interested, we hope to be favored with your inquiries.

27-in. Swing x 12 ft. Bed Screw Cutting Lathe.

Shipping Weight, 7,100 lbs.



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From 14 in. to 42 in. Swing.

CHUCKING LATHES,
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HAND LATHES,
CRANK PLANERS,

72 in. HORIZONTAL BORING MILLS.

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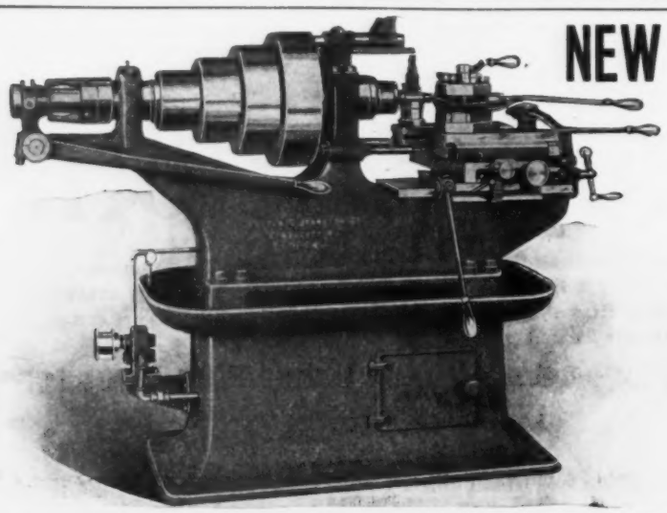

NEW MANUFACTURING TURRET LATHE

will rapidly turn, bore, chuck, face, etc., machine parts.

All work is done and all parts changed without stopping the machine whether the internal collets, the expanding collets or the lever chuck is being used.

WE ALSO MANUFACTURE

Universal Shaping Machines and Automatic Chucking and Turning Machines.

POTTER & JOHNSTON Co

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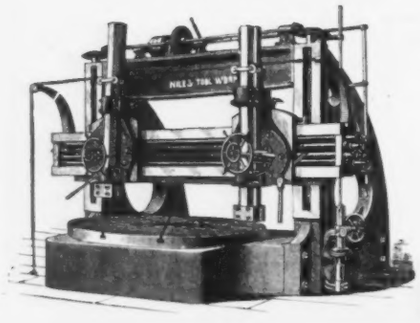

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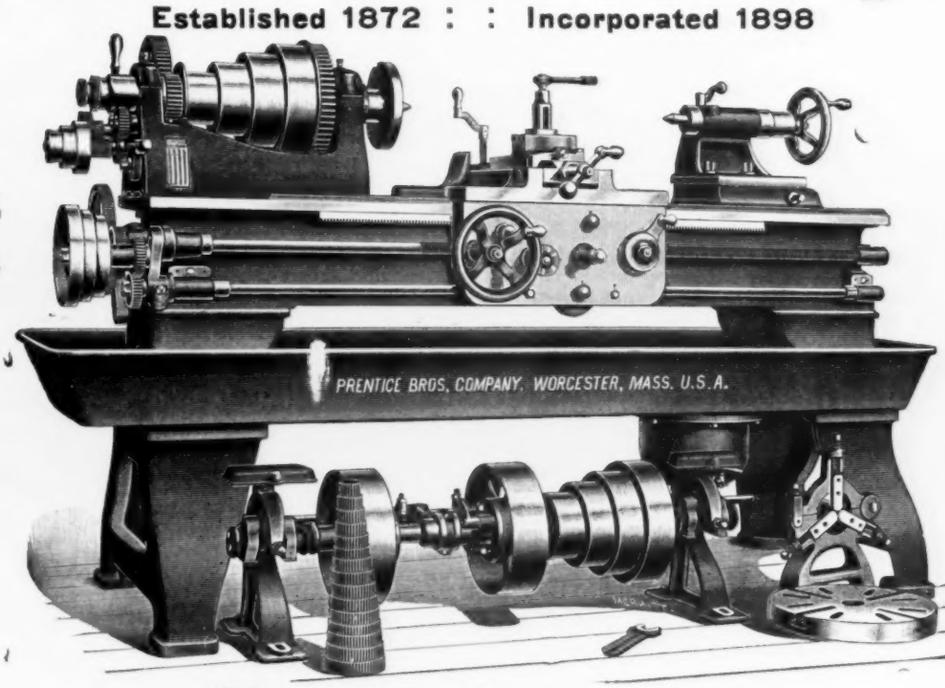

Drilling Machinery and Engine Lathes.

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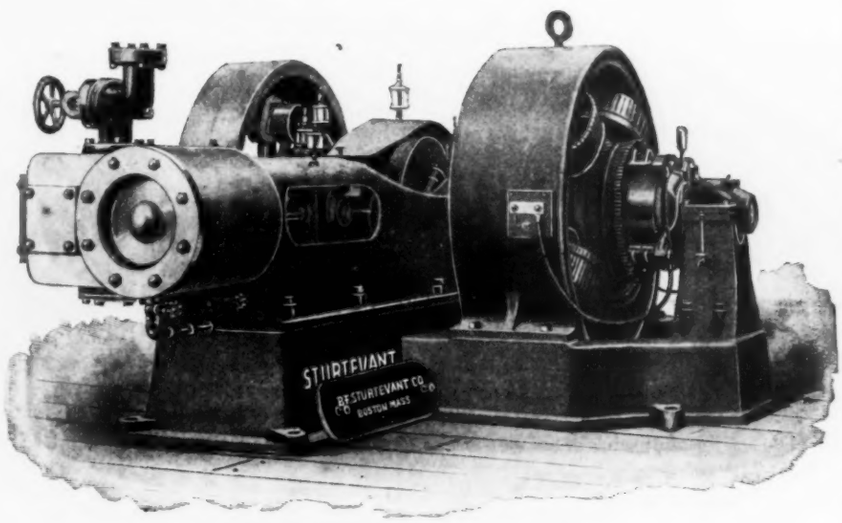

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MADE IN 48 SIZES—VERTICAL OR HORIZONTAL.

PRESSURE and BLAST BLOWERS,
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HORIZONTAL and VERTICAL STEAM ENGINES,
1 to 250 Horse Power,
ELECTRIC MOTORS and GENERATORS,
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1 to 100 K. W.,
BLOWER SYSTEM of HEATING, DRYING and VENTILATING,
DUST COLLECTORS and complete systems for the removal of dust,
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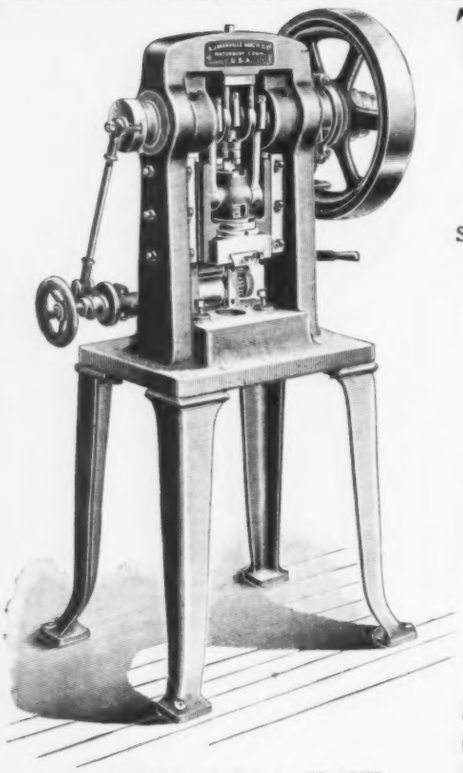

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THE LATEST THING ...

IN... Double Acting Power Presses

RIGID CONSTRUCTION, RAPID ADJUSTMENT

"Pillar" and "Open-Back" Patterns

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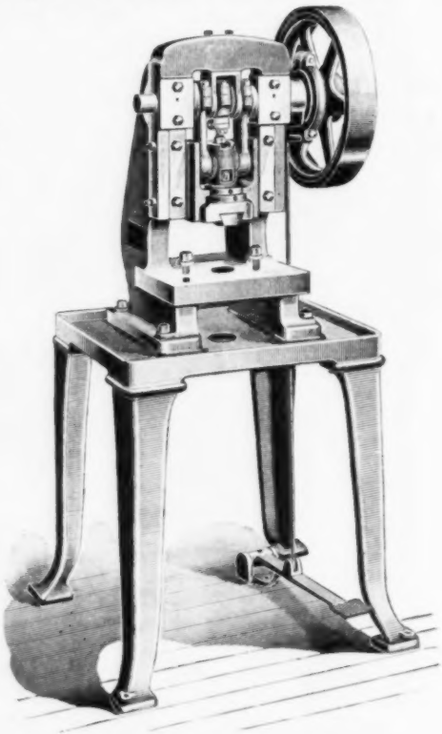

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THE E. J. MANVILLE MACH. CO.,

Waterbury, Conn.

BROWN & SHARPE MFG. CO.,

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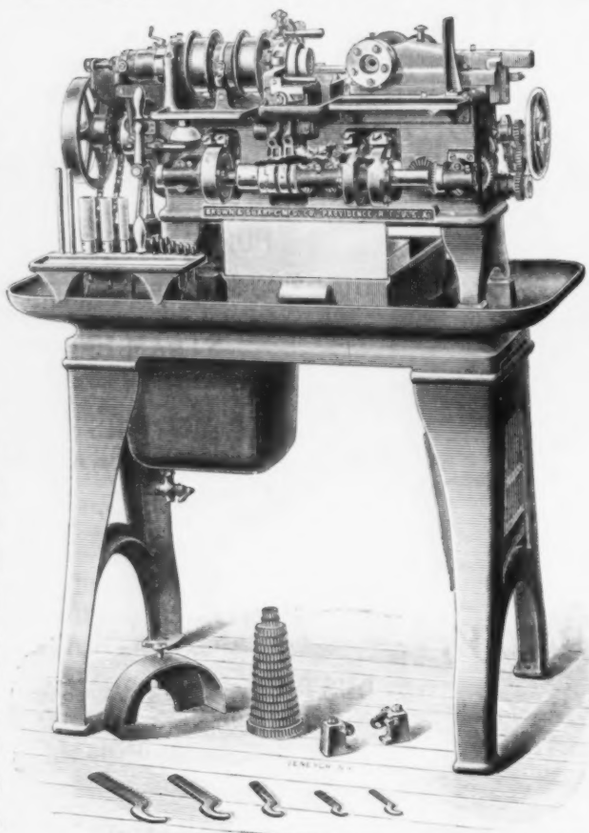

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Automatic Screw Machine.

Rapidity and Accuracy of Production.

If Sample Pieces or Drawings are furnished we can give estimates of Production.

Catalogue and Full Information on Application.

New York Office:
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IN GOOD ORDER FOR IMMEDIATE DELIVERY.

ENGINE LATHES.
12 in. x 5 ft. Reed.
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16 in. x 6 ft. Prentice.
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16 in. x 8 ft. Springfield.
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20 in. x 10 ft. Putnam.
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24 in. x 12 ft. Putnam.
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30 in. x 10 ft. Pond Tool Co.
32 in. x 18 ft. Waterman.
36 in. x 16 ft. Fitchburg.
40 in. x 22 ft. Fifield.
50 in. x 14 ft. Fifield.
52 in. x 22 ft. Wood Light Ex. heavy, triple geared

SHAPERS.
10 in. crank, New Haven.
12 in. " Gould-Eber.
12 in. " Prentiss.
15 in. friction, Prentiss.
15 in. crank, Smith-Mills.
15 in. crank, Gould-Eber.
24 in. crank, Gould-Eber.

SCREW MACHINES Wire Feed.
29-32 in. Bardons & Oliver.
1 5-32 in. " "
1 9-16 in. " "
1 15-16 in. Garvin, No. 3, Fric head, Tur. feed.
2 in. Davis-Egan, complete
2¼ in. Jones-Lamson, No. 3.

MILLING MACHS.
No. 1 Univ., Brown & Sharpe, with atts.
No. 3 Hand, Garvin.
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Bridgeport Standard Pattern, auto. feed, weight 3000.
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30 in. x 8 ft. Rochester.
36 in. x 8 ft. Wheeler.
36 in. x 12 ft. Sellers.
38 in. x 10 ft. Pond.
38 in. x 8 ft. Pease.
40 in. x 12 ft. Fitchburg.
48 in. x 8 ft. Pond Tool Co.

UPRIGHT DRILLS.
20 in. Prentice, plain.
20 in. Blaisdell, Bk. gears.
25 in. Barnes, complete.
28 in. New Haven, "
30 in. Prentice, "
3-Spin. Slates, latest.

RADIAL DRILLS.
72 in. swing, Standard.
88 in. swing, Semi-univ.
108 in. swing, Niles.

MISCELLANEOUS.
Universal Grinder, 16 in. swing, Brown & Sharpe.
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Medart Shaft Straightener
Morton 24 in Keyseater.
Gould 36 in. Gear Cutter.
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BOILER TOOLS.
Power Rolls, 14 ft., latest.
Plate Planer, Sellers.
Punches, various sizes.
Double Punch and Shear

Large Stock NEW STANDARD TOOLS.

J. J. McCabe,

14 Dey St., New York.

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14 in., 16 in. and 22 in. Corliss Engines.

16 in., 20 in. Buckeye Automatic Engines.

100, 250 and 350 H. P. Westinghouse Compound Engines.

50 to 200 H. P. Slide Valve Engines.

14 in., 16 in., 18 in., 20 in., 24 in. and 36 in. Screw Cutting Lathes.

16 in., 20 in., 24 in., 36 in., 54 in. and 60 in. Planers.

36 in., 50 in. and 60 in. Radial Drills.

Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

FRANK TOOMEY,
Nos. 120 and 131 N. Third St., Phila., Pa.

BOILERS.

2 125 H. P. Loco. Style, 100 lbs. steam pressure.
2 100 H. P. Loco. Style (Wooten fire boxes).
7 80 to 100 H. P. Loco. Style, 100 lbs. steam.
1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished.

POULTERER & CO.,
410 Bullitt Bldg., Phila., Pa.

FOR SALE.

26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in. built by C. H. Brown & Co., Fitchburg, Mass. FRANK McSWEGAN & SONS, Dover St. and Franklin Square, N. Y.

For Sale.

One 16 in. x 32 in. "Fishkill" Horizontal Corliss Engine, practically new.

One 200 lb. "Bradley" Helve Hammer.

One 60 in. x 60 in. x 12 ft Planer.

One 6½ x 10 in. Double Cylinder, Double Drum "Crook" Hoisting Engine with boiler attached.

The above are second-hand but in first class condition.

L. F. SEYFERT'S SONS,
437-441 N. 3d St., Philadelphia, Pa.

Second-hand Machinery,

IN FINE CONDITION.

60 in. New Haven Pulley Lathe with face plate jaws.
30 x 12 H. C. Fish Lathe, compound rest, taper attach. and chuck.
21 x 9 Lodge-Davis Lathe, comp'd rest, taper attach.
18 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
16 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
21 x 24 ft. Perkins Plain Rest and Chuck.
20 x 8 Putnam compound rest and chuck.
14 x 6 Prentice Elevating Rest and Chuck.
40 in. New Haven Drill, Back Geared, Power Feed.
34 in. Barnes " " " " "
25 in. Prentice " " " " "
30 x 30 x 6 ft. Pond Mch. Tool Co. Planer.
28 x 24 x 5 ft. New Haven Planer.
20 x 16 x 3 ft. " " "
17 in. Juengst Shaper.

S. M. YORK CO.,
Cleveland, Ohio.

FOR SALE.

SHAPERS.

16 in. to 32 in. stroke.

J. STEPTOE & CO.,
CINCINNATI, O.

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48 in. x 33 in. x 8 ft. Single Head Planer,
21 in. x 15 ft. Fitchburg Lathe.
1 1-16 in. Brown & Sharpe Wire Feed Screw Machine.
⅝ in Spencer Coil Wire Automatic Screw Machine.
8½ in. Gear Cutter, not automatic.
No. 2 Hilles & Jones Double End Punch and Shear, 16,000 lbs.
Send for complete list just out.

HENRY F. HILL,
123 Oliver Street, Boston, Mass.

SECOND-HAND MACHINERY.

1 Planer 72 in. x 36 in. x 9 ft., two heads.
1 Planer 60 in. x 60 in. x 14 ft. Screw feed, cheap.
1 Planer 16 in. x 16 in. x 3 ft. Gould Planer.
1 Iron Planer, 36 in. x 36 in. x 14 ft.
1 36 x 24 x 5 ft. Pond Planer.
1 Iron Planer, 22 x 22 x 5 ft., Hendey make.
1 Engine Lathe, 42 in. x 14 ft.
1 Engine Lathe, 22 in. x 14 ft., with chuck.
1 Heavy Pit Lathe, to swing 10 ft.
1 1000 lb. Steam Hammer.
1 2000 lb. Miles Steam Hammer.
1 400 lb. Morgan Steam Hammer.
1 250 lb. Morgan Steam Hammer.
1 48 in. Horizontal Boring Mill, Pond make.
1 Clayton Air Compressor, 16 in. x 16 in. x 14 in. stroke.
1 250 lb., 1 200 lb. Farrell Drop.

Machinery appraised any part of country.

NEW YORK MACHINERY DEPOT,
Office, 178 Broadway, N. Y.

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250 MACHINE TOOLS,

All first class, comprising the entire plant of the Warwick Cycle Mfg. Co., Springfield, Mass. Will be sold in lots to suit.

A. B. PITKIN MACHINERY CO.,
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I have 100 Horse Power Locomotive Boiler, good for 125 lbs. pressure, nearly new, extra large fire box; Round and Square Iron Tanks, all sizes; Boiler Shells for stacks and culverts; Pumps, Upright and Horizontal Boilers, Engines, Blow-off Tanks. All kinds of Scrap Iron and Metals bought.

ROBERT M. CUNLIFFE,
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FOR SALE CHEAP.

One second-hand Punching Machine. Capacity 1⅛ hole in 1 in. plate. Address
"PUNCHING,"
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Rather than move the following new and second-hand machines into our new shop, we will make SPECIAL PRICES on them. Write us!

LATHES.
12 in. x 5 ft. Bement.
13 in. x 6 ft. Silk.
16 in. x 7 ft. Harrington.
21¼ in. x 11 ft. Thayer & Houghton
25 in. x 8 ft. Putnam, not s.c.
26 in. T. C. Lathe, 3¼ in. hole in spindle. Tool front and back.
27 in. x 27 ft. L. & D., Taper.

SHAPER.
No. 2 Fitchburg, Traveling Head.

PLANERS.
24 in. x 24 in. x 6 ft. Whitcomb.
24 in. x 24 in. x 8 ft. Smith-Silk.
26 in. x 26 in. x 8 ft. Putnam.

DRILLS.
20 in. Wheel & Lever Drill.
20 in. Wheel & Lever, B. G.
24 in. B. G. P. F. A. S.
28 in. B. G. P. F. A. S.
32 in. B. G. P. F. A. S.
40 in. B. G. P. F. A. S.
1 Henley Swing Drill.
14 in. Aurora Sensitive.
16 in. Sensitive, Flickinger.

MISCELLANEOUS.
16 in. x 6 ft. Fox Monitor.
24 in. Pulley Lathe.
24 in. Turret Lathe, 4500 pound.
26 in. Pulley Lathe.
Harrington Suspension Drill No. 1 for plate work.
1 Brass Valve Machine.
Emery Stands for two wheels 1 in. x 2 in.
Garvin Screw Slotter.
Hand Forge, Foos Mfg. Co., Scientific No. 3.
Sellers Twist Drill Grinder.
Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS

IN

MACHINE TOOLS.

Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe.
22 in. x 12 ft. Flather Engine Lathe.
No. 0 Pratt & Whitney Screw Machine with wire feed.
1 Fitchburg 30 in. x 30 in. x 8 ft. Planer.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear.
Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
1 3-head Slotter for locomotive frames; bed 36 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,

156 Oliver St., Boston, Mass.
12 South Canal St., Chicago, Ill.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
36 in. x 18 ft. Fifield.
27 in. x 10 ft. Davis&Egan
25 in. x 12 ft. S.C.Forsaith
24 in. x 16 ft. S.C.Forsaith
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
16 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.

17 in. x 17 in. x 4 ft. Putnam Planer.
Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
1¼ in. x 5 ft. Turret Lathe.
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & K.
No. 4½ B. G. Garvin Miller
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
15 in. Davis&Egan Shaper.
26 " " "
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
3 50 lb. Bradley Strap Hammers.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago.

Second-Hand Tools.

ENGINE LATHES
- 1 13 x 5 Plain Turret Lathe.
- 1 14 x 5 Putnam.
- 1 15 x 5 Bullard.
- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 18 x 10 Steptoe-McFarlan.
- 1 20 x 8 Pond.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.

DRILLS.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 15 in. Betts Traveling Head.

SCREW MACHS.
- 1 ⅛ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head.
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1¼ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton Keyseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting-off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
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14, 16 and 18 in. Monitor Lathes.
13, 14 and 15 in. Hand Lathes.
1¼ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. Co.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.
Second-hand Machinery.

ENGINE LATHES.
- 1 54 in. x 22 ft. Pond, triple back geared, blocks to make it swing 66 in.
- 1 30 in. x 23 ft. New Haven.
- 1 24 in. x 16 ft. H. C. Fish & Co., blocks to raise to 32 in.
- 1 96 in. x 50 in. x 12 ft. Gap Lathe, triple B. G.
- 7 20 in. x 8 ft. to 12 ft. Lathes, different makes.
- 11 18 in. x 8 ft. to 12 ft Lathes, different makes.
- 6 16 in. x 6 ft. to 8 ft. Lathes, different makes.
- 22 14 in. x 6 ft Lathes, different makes and style of rests.

PLANERS.
- 1 36 in. x 36 in. x 9 Pond.
- 1 36 in. x 36 in. x 9 New Haven.
- 1 30 x 26 in. x 8 Putnam.
- 1 24 x 24 x 6 Whitcomb.
- 1 24 x 24 x 6 Pond.
- 1 22 x 22 x 5 Davis.

MILLING MACHS.
- 1 No. 4 Cincinnati univ.
- 1 No. 1 " "
- 1 No. 2 " plain.
- 1 No. 3 Brainard "
- 1 No. 3 Kempsmith "
- 1 No. 2 Garvin "
- 1 No. 13 Brown & Sharpe plain.
- 2 Ames Lincoln Pattern.
- 1 No. 3 P. & W. Lincoln Pattern.

SHAPERS
- 1 26 in. Hendey.
- 2 15 in. "
- 1 20 in. Gould & Eberhardt
- 1 16 in. Steptoe.
- 1 14 in. Fitchburg.
- 1 14 in. Putnam, traveling head, two tables.

MISCELLANEOUS.
- Screw Machines.
- Turret Lathes.
- Drill Presses.
- Bolt Cutters.
- Power Presses.
- Bradley Hammers.

Also complete line of improved new mach'ne tools.
Write us for anything you want.
Write for complete list.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine, 85 H. P.		$225
One 9x18 " " " " 25 H. P.		125
One 65 H. P. Hor. Tubular Boiler, complete,		225
One 50 " Vertical " " "		200
One 40 " " " " "		200
One 12" Double Rocking Scrap Shear,	- -	125
6", 5", 4", Section Steam Pumps, each	-	100

SCHULTZ & CO., 14 So. Broad St., Philadelphia.

HEAVY TOOLS,
For Quick Delivery—Good as New.
Column Lathe, 54 in. x 30 ft., solid Cast Base, 2 Heads. Splendid Tool.
4-Spindle Drill Press, Movable Spindles and Table Quick and Accurate. Heavy Tool. Finest Condition. H. B. PERRY, 3923 Union Av., Chicago.

Two Fine Lathes.

One 72-in. swing x 24 ft. bed, triple geared, screw feed, with quick return. Very heavy and in excellent order.

One 17 in. swing x 8 ft. bed, built by I. H. Johnson & Co., and nearly new; back geared, compound rest, modern pattern. Fine order.

Also a 2½ in Merriman Bolt Cutter, 36 in. Column Drill, 1½ in. Gould Bolt Cutter.

All bargains.

THOMAS P. CONARD,
Forrest Building, PHILADELPHIA.

FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
24 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " " " "
10 Frisble Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 3 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
13-18¼ x 10¼ x 10 Compound Worthington Pump.
10-16 x 10¼ x 10 " " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
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FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & B. Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen't'g Set.

WICKES BROS., Saginaw, Mich.

FOR SALE.

1 24 in. x 24 in. x 6 ft. Planer, Hilles & Jones.
1 36 in. x 24 in. x 6 ft. "
1 12 in. x 10 ft. Engine Lathe, " "
1 21 in. x 10 ft. " " Fifield.
2 14 in. x 6 ft. " " Blaisdell.
1 18 in. x 9 ft. " " Lathe & Morse.
1 16 in. x 8 ft. " " Pratt & Whitney taper.
1 24 in. Crank Shaper, Gould & E.
1 42 in. Radial Drill, Hilles & Jones.
1 8 in. x 12 in. Automatic Engine.
1 No. 8 Sturtevant Pressure Blower.
1 No. 4 Root Blower.
1 Ferracute Foot Press.
1 Roper Oil Separator.

Warehouse, 20-22 Frankfort St.

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CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 ft. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
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150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.
4 18 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

S. T. LUND,
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(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS,
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.
- 13 in. x 6 ft. Ames.
- 14 in. x 6 ft. Prentice.
- 16 in. x 6 ft. Ames.
- 18 in. x 12 ft. Bogart.
- 27 in. x 12 ft. W. & L.
- 16 in. x 8 ft. Pattern Maker's.

Screw Machines
- No. 2 Wire Feed.
- No. 2 P. & W., plain.
- No. 2½ P. & W., W. F.
- No. 4 Windsor, plain.
- No. 4 Windsor, W. F., auto.
- No. 2 Niles, heavy.

Planers.
- 16 in. x 16 in. x 4 ft.
- 20 in. x 20 in. x 5 ft.
- 24 in. x 24 in. x 4 ft.
- 25 in. x 25 in. x 10 ft.
- 28 in. x 28 in. x 8 ft.
- 36 in. x 36 in. x 12 ft.
- 48 in. x 48 in. x 15 ft.
- 60 in. x 60 in. x 22 ft.
- 72 in. x 72 in. x 20 ft., 8 heads.

Shapers.
- 9 in. T. H., Sellers.
- 13 in. T. H., Bement.
- 20 in. G. & E.

Drills.
- 6 Spindle, Quint.
- Pond Suspension.
- 22 in. G. & E., geared.
- 24 in. Ames, geared.
- 32 in. G. & E., geared.
- 32 in. Harris, geared.
- Combined Drill and Slotter.
- 4 spindle Ames.
- Bicycle Frame Drill.

Millers.
- Lincoln Type, P. & W.
- Hand Miller, Ames.
- Special Cam Miller.
- Double Head Cam Miller, P. & W.

Miscellaneous.
- 24 in. Lead Lap. Mch.
- No. 2 W. T. Grinder.
- Centering Machine.
- 24 in. Gear Cutter.
- 36 in. H'd Gear Cutter.
- 48 in. x 12 ft. Hor. Boring and Drill. Machine.
- 12 in. Splitting Shear.
- Car Mortiser & Borer

We have named above only our choicest tools.
Write us for anything you want.
Prices on application.

The Niles Tool Works Co.,
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66-INCH PLANER

Delivery April 1st; planes 66 in. wide, 52 in. high; can be made any length of bed; two heads on cross rail; one or two side heads, as desired. Weight on 14 ft. bed, 30,000 lbs. Send for full description and price.

36 in. Planers for delivery in thirty days.

Send for list of second-hand Planers.

Marshall & Huschart Machinery Co.,
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19 S. Water St., Cleveland, O.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ¼, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $250 each. Numerous machines not mentioned for want of space.

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ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine
1 New 54 in. x 18 ft., 60 3-in tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg. Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place.
Philadelphia, Pa.

Second-hand Machinery.

50 in. Bickford vert. boring mill.
33 in. N. Y. Steam Eng. Co. car wheel borer.
4 in. bar 7 ft. table Newark horiz. boring mill.
70 x 16 Whittier boring mill.
4-spindle Colts gun stock profiler
2-spindle Lamson & Goodnow profiler.
42 in. Gleason gear planer.
7½ in. heavy pit lathe.
70 x 16 driving wheel lathe.
30 and 33 in. Putnam pulley lathes, 2 heads.
26 and 28 in. Stevens pulley lathes.
50 in. Williams & Rich gear cutter.
48 in. Hewes & Phillips gear cutter.
26 in. Putnam gear cutter.
Burr portable shaft key seater.
No. 1 Davis key seater, as good as new.
No. 5 Giant key seater, slightly shop worn.
Pratt & Whitney screw slotter.
Garvin screw slotter.
2 No. 1 Slates automatic pinion cutters.
2 in. cone driven cutting off machine.
Monthemnont metal saw with tube cutting attach.
7 No. 2 Higley cold sawing machines, 18 in saws.
Lee & Hunt cold saw with engine.
24 in. Pratt & Whitney lead lapper.
4 H. P. Globe gas engine, fine order.
2 15 x 2¼ P. & W screw shavers.
2-spindle Whiton centering machine.
2 2-spindle Brown centering machines.
2 850 lb. Merrill fric. b ard drop hammers.
700 lb. Merrill drop hammer.
600 lb. Pratt & Whitney drop hammer.
400 lb. P. & W. drop hammer.
50 lb. Bradley cushioned strap.
8 No. 2 Waterbury bench foot presses.
600 lb. Bement steam hammer.
90 lb. Ferris & Miles steam hammer.

We have named above only a few of the tools in stock. We also carry a large assortment of Lathes, Planers, Drills Shapers and other tools When you are in need of anything do not fail to write us. Send for complete new and second-hand lists.

PRENTISS TOOL & SUPPLY CO.,
603 D. S. Morgan Bldg., Buffalo, N. Y.
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FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

2 Alligator Shears.
1 Rotary Shears.

Machinery of all kinds.

Tanks all sizes for sale or exchange for scrap iron.

WM. ECKBOLDS' SONS,
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FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

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Ave. A and 23d St., New York.

Large Lathes Wanted

That will swing 60 in over the carriage; compound rest, with cross feed. 16 ft. between centers preferred.

ALSO ONE HEAVY PLANER: Platen 36 in. wide; 13 or 14 ft. long.

Send description, lowest price, and state where same can be seen, to

BOX 164, Worcester, Mass.

WILL BUY

About 15 to 20 Tack Machines, if at right price.

State size and make and how long they have been running. Address

"TACK,"
Care *The Iron Age*, New York.

FOR SALE.

One No. 50 Crosby Power Press (new) with bolster, inclined legs, patent knock out and automatic brake. JAMES HILL MFG. CO., Providence, R. I.

SECOND-HAND

Metal-Working Machinery

At Bargain Prices.

Lathes.

One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Philips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N Y. City.
Branches at Chicago and Pittsburg.

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Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
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BEMENT BORING MILL.

1 54 in. Bement Boring and Turning Mill.
1 12 in. Bement Slotter.
1 5 ft. Full Universal Radial Drill.
1 Gisholt Tool Grinder.
1 12 in. Turret Lathe.
1 16 in. x 6 ft. Ames Lathe.
1 Heavy Grinder.

All good as new.

J. W. WRIGHT & CO., St. Louis, Mo.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

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One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes.

31 x 108 in. Plate Mill, Roughing Rolls, 28 x 84 in., live tables.

1 110 in. Plate Shear.

Pair 36 x 40 in. Horizontal Reversing Engines.

1 18 in. Bar Mill.

2 10 in. 3-high Bar Mills.

Engines, Shears, Roll Lathes, 20 Boilers.

Blowers.

One 10 ton Locomotive Crane.

One 2 ton Locomotive Crane. Both standard gauge.

Supply and Hydraulic Pumps.

Large lot of other machinery such as used in a large steel works.

W. J. CARLIN,
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BARGAINS.

16 in. x 16 x 3 ft. Planer, Pratt & Whitney.
36 in. x 36 in. x 8 ft. Planer, New Haven.
17 in. x 8 ft. Engine Lathe, Wright & Smith.
20 in. x 12 ft. " " L. W. Pond.
24 in. x 21 ft. " " New Haven.
54 in. x 11 ft. " "
84 in. Radial B.G. & S.F'd, Betts Mch. Co.
36 in. x 6 ft. Turret Ch'k'g Lathe, Bullard.
Pond Index Miller.
No. 2 3-spindle Gang Drill, Garvin.
No. 2 Wire Feed Screw Machine. Takes 1" Stock. Good as new. Costilo.
2 No. 18 Bliss Presses. Good order.

Can give bargains in new and second-hand machine tools at all times.

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MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

HILL, CLARKE & CO.,
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ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
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FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
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323-325 Water St., 392-394 First Ave.,

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3 in. x 48 in. Hand Bending Rolls.
No. 0 Stiles & Parker Fowler Press.
No. 1 " " " "
36 in. Gould & Eberhardt Spur Gear Cutter.
No. 1 Newton Plain Milling Machine.
No. 11 Brown & Sharpe Milling Machine.
48 in. Pulley Borer.
19 in. Putnam Slotter.
100 lb. Merrill Bros Air Cushioned Hammer.
80 lb. " " " " "
24 in. Hendey Shaper.
No. 10 Sturtevant Pressure Blower.
No. 8 " Monogram Blower.
48 in. Box Radial Drill.
24 x 24 x 5 ft. Planer.
2 in. Acme Bolt Cutter.
18 in. Blaisdell Drill Press.
400 lb. Steam Hammer.
9 in. Star Foot Lathe.
Engine and Turret Lathes.

FOR SALE.

An old established Hardware Business, the best stand in New England. For particulars inquire of

BALDWIN, ROBBINS & CO.,
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NAIL MACHINES
For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

IMPORTANT.

First-class new manufacturing property to let. Most substantial brick buildings, high ceilings, many windows, Engine, Boiler, line shafting, steam heat, draughting room, three offices, large lot. Four trunk lines railroad. Daily boats. 1½ hours from this city by railroad. Suitable for any business. Will alter to suit tenants. Strikes unknown. Have plan of property. Address

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I Offer For Sale

a well equipped foundry and machine shop at Poughkeepsie, New York, together with the lease, and will be pleased to hear from any one desirous of purchasing such a plant.

CHAS. F. COSSUM,
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FOR SALE.

At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power.*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c. to J. Stewart Walker, Court's Agt., Lynchburg, Va.

FOR SALE.
ENGINE.

150 H.-P., Beck Automatic Cut off.
Cylinder, 16 in. Diameter.
Stroke, 24 in.
Condition, Good.

THE JACOBS CORDAGE CO.,
Harriett and Budd Sts., Cin., O.

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

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Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

Metals Wanted.

We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

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Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
Care *The Iron Age*, 805 Fisher Bldg., Chicago.

We Have For Sale

2 150 h. p. Babcock Wilcox Boilers, with first joint connections.
1 18 h. p. Gasoline Engine.

ALL IN FIRST CLASS CONDITION.

FRANK SAMUEL,
Harrison Building, 15th and Market Sts.,
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ENGINE.

Vertical, 16 in. x 18 in. cylinder, in first-class order, complete. Price, $575.00.

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Shell, 56 in. dia., 34 Tubes, 5 in. x 15½ ft. Price, $150.00.

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JAMES LEFFEL & CO.,
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Locations for Industries.

The Chicago, Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y,
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FOR SALE—LUDINGTON IRON WORKS.

Late GEO. GOODSELL, Proprietor.

The entire plant consisting of four lathes, one shaper, one slotter, two drill presses, one planer, steam hammer, pipe cutter, stamping machine, engine and boiler, and all other machinery not enumerated shafting, bar iron and castings, gas pipe, iron and brass goods. Also a carload of patterns of all descriptions useful in this line. Prefer to sell all the machinery outright. We desire an offer within thirty days from parties wishing to investigate. Address,

LUDINGTON IRON WORKS, Ludington, Mich.

SECOND-HAND
Turret and Screw Machines
FOR SALE, LOW.

No. 1 Brown & Sharpe Screw Machine, Wire Feed.
No. 2 Garvin Screw Machine, Wire Feed.
No. 2 Garvin Turret Lathe, Wire Feed.
No. 2 Windsor Screw Machine, Chasing Bar.
No. 2½ Garvin Screw Machine, Back Gears and Oil Pump.
No. 2½ Pratt & Whitney Screw Machine, Wire Feed.
No. 2½ Garvin Turret Lathe, Wire Feed and Friction Back Gears.
No. 2½ Garvin Turret Lathe, Automatic Chuck.
No. 2½ Pratt & Whitney Hub Machine.
2 No. 3 Garvin Screw Machines, Geared Friction Head and Back Gears.
No. 3 Garvin Screw Machine, Wire Feed and Friction Head.
No. 3 Pratt & Whitney Screw Machine, Friction Head.
No. 5 Brown & Sharpe Screw Machine, Chasing Bar.
No. 12 Garvin Screw Machine, Wire Feed.
3 No. 12½ Garvin Screw Machines, Wire Feed.
13 in. x 5 ft. Prentiss Turret Lathe.
15 in. Jones & Lamson Chucking Lathe.
16 in. x 6 ft. Fox Turret Lathe. Chasing Bar, complete.
16 in. x 6 ft. Fox Turret Lathe. Chasing Bar and 2-Jaw Chuck.
18 in. x 5 ft. Stiles Turret Lathe.

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Spring and Varick Sts., N. Y.

PHILADELPHIA STORE,
The Garvin Machine Co.,
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SALES AGENCY.

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One large horizontal blowing engine.
One B. Knowles steam pump.
One plunger boiler pump.
Thirteen wrought iron filling barrows.
One pair Fairbanks' charging scales.
One pair Richie Bros.' pig iron scales.
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One large Knowles pressure pump.
One lot tools, carts, chains, blocks, etc.
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Twenty five thousand fire brick.
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Three shed buildings.
One office building
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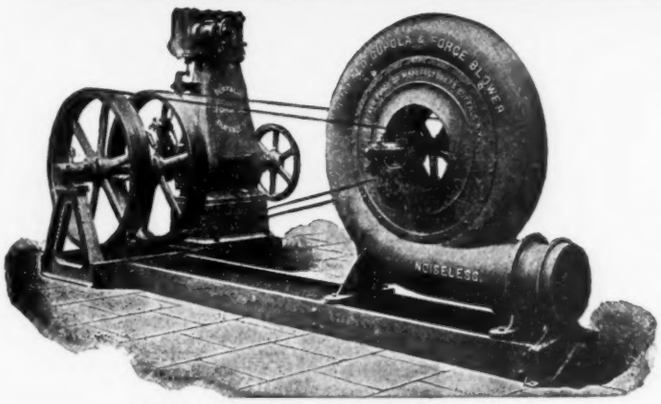

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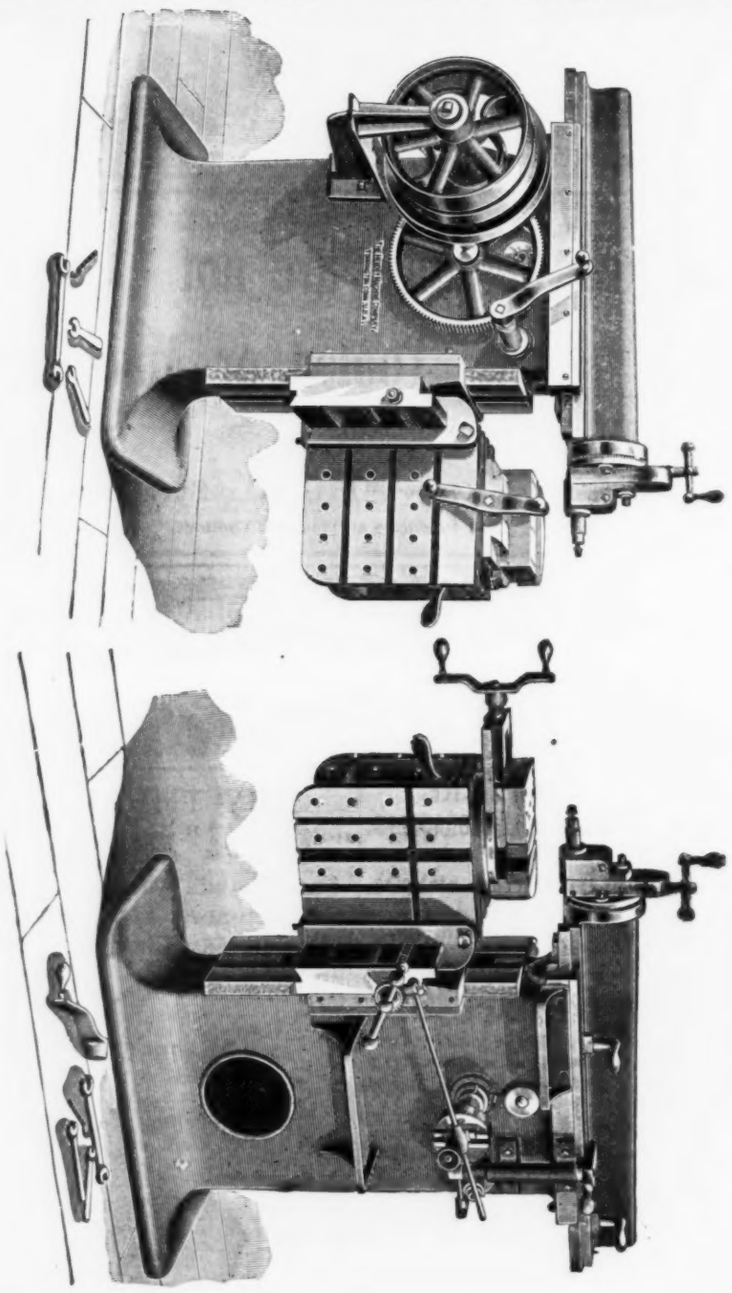

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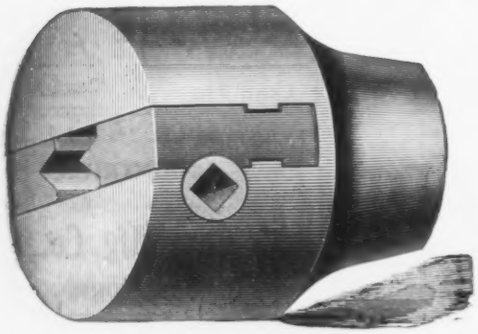

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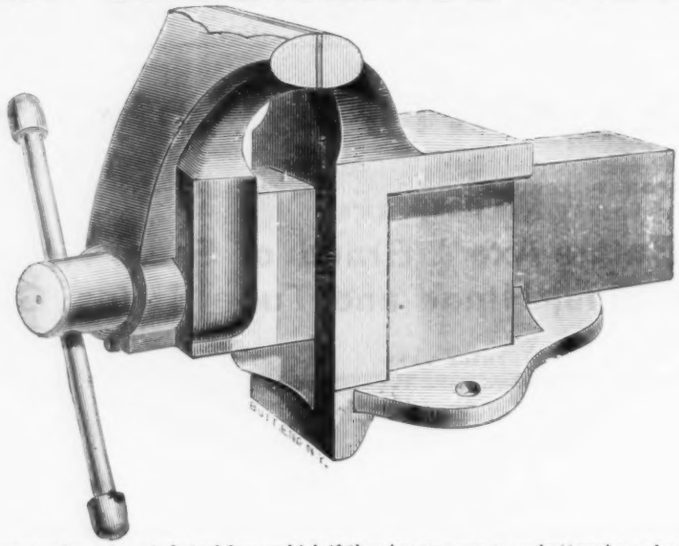

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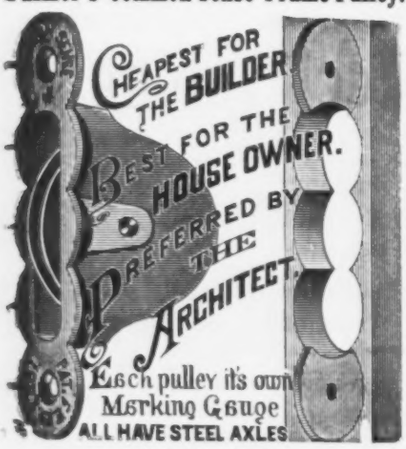

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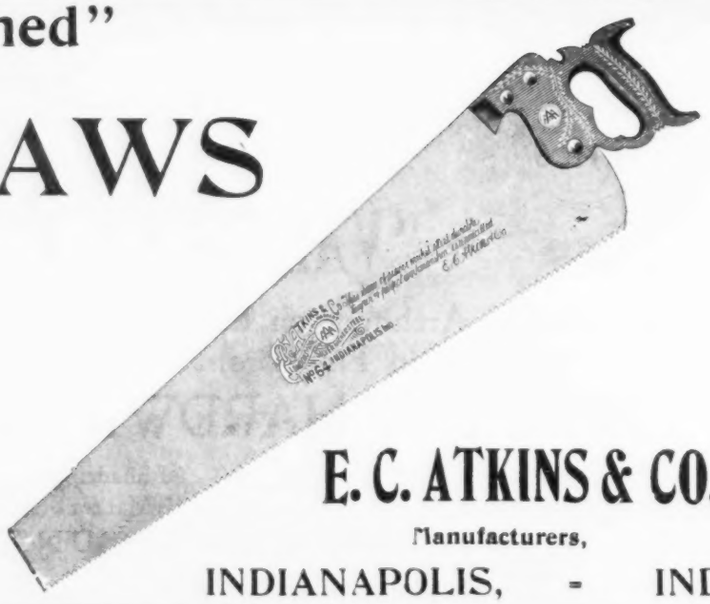

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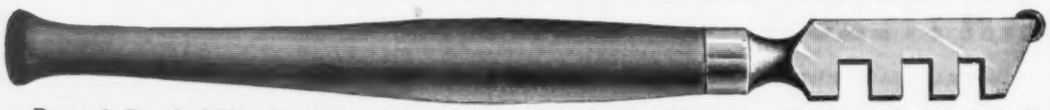

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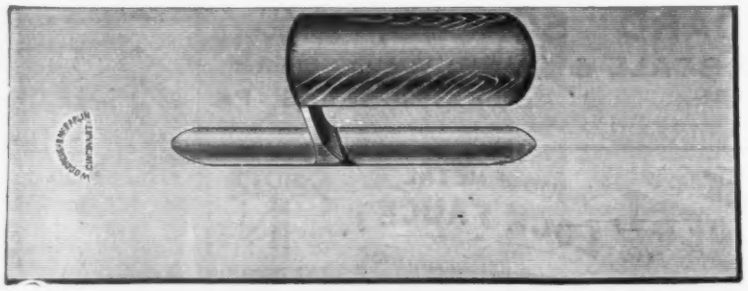

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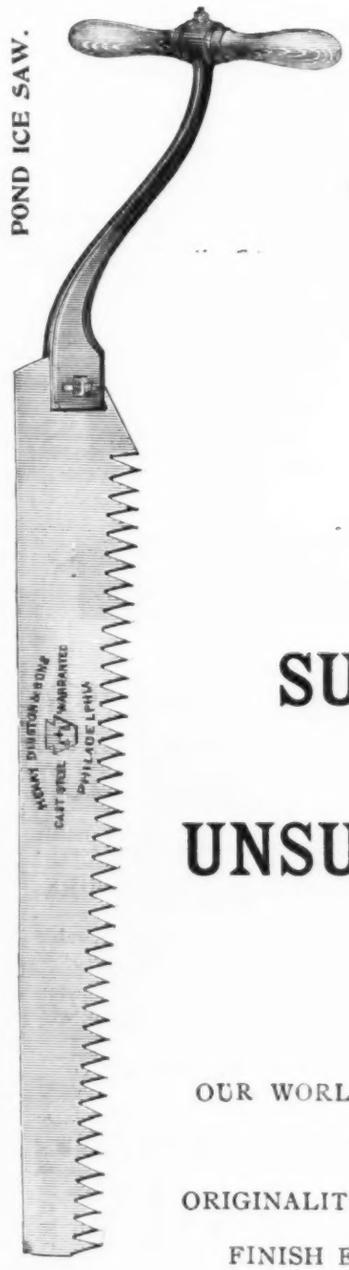

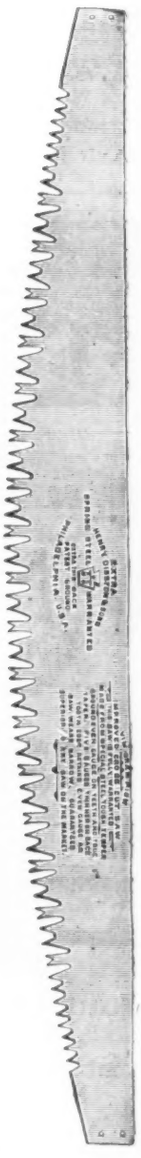

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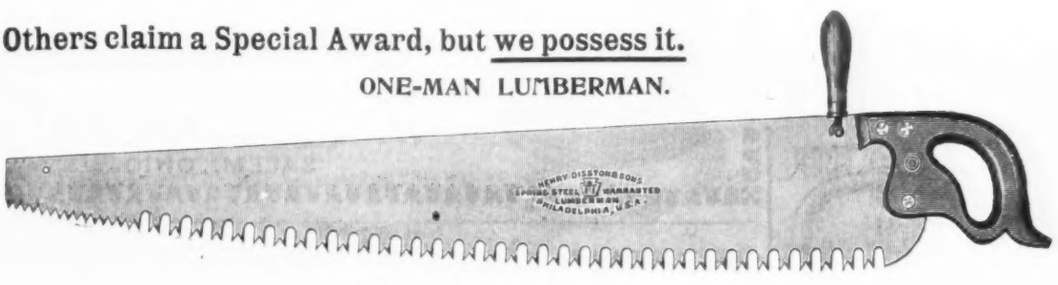

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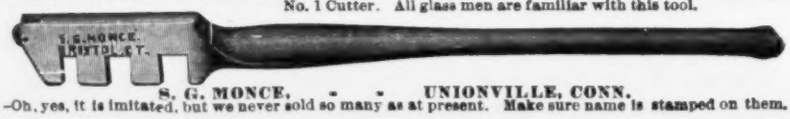

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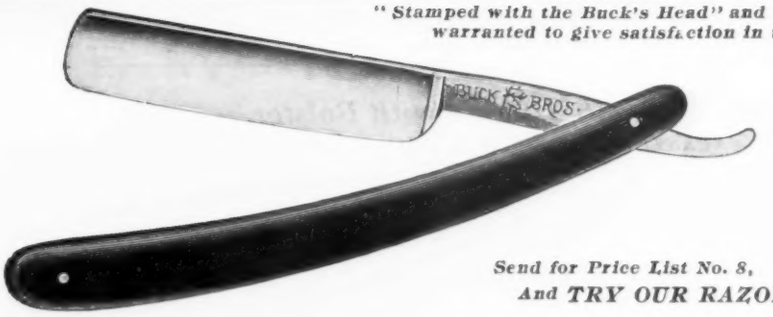

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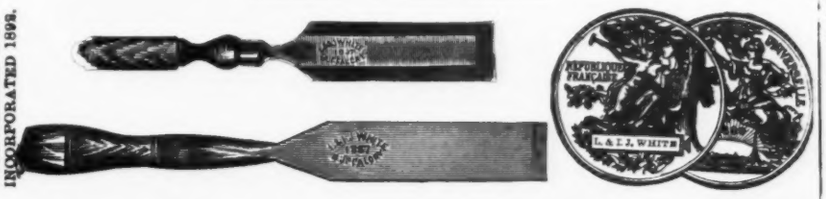

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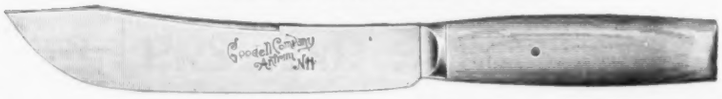

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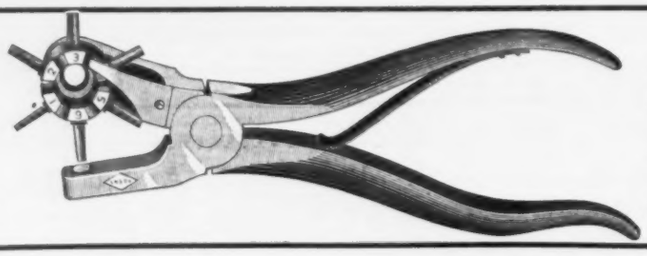

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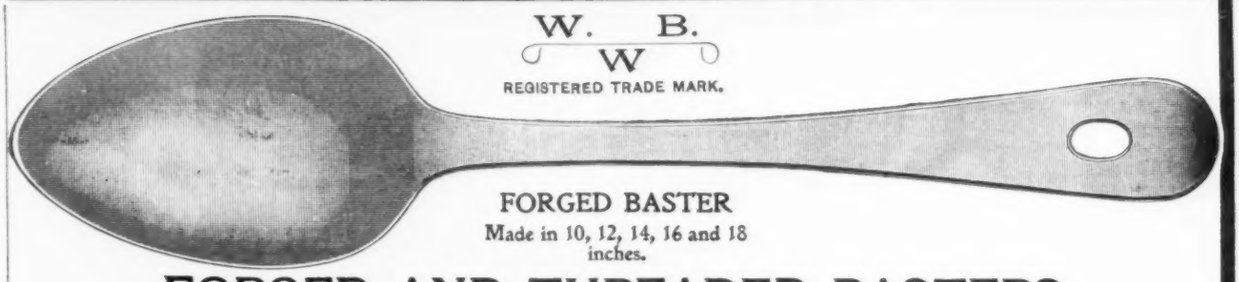

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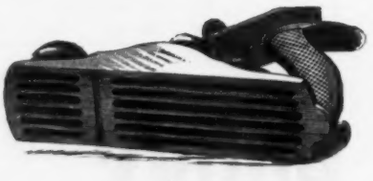

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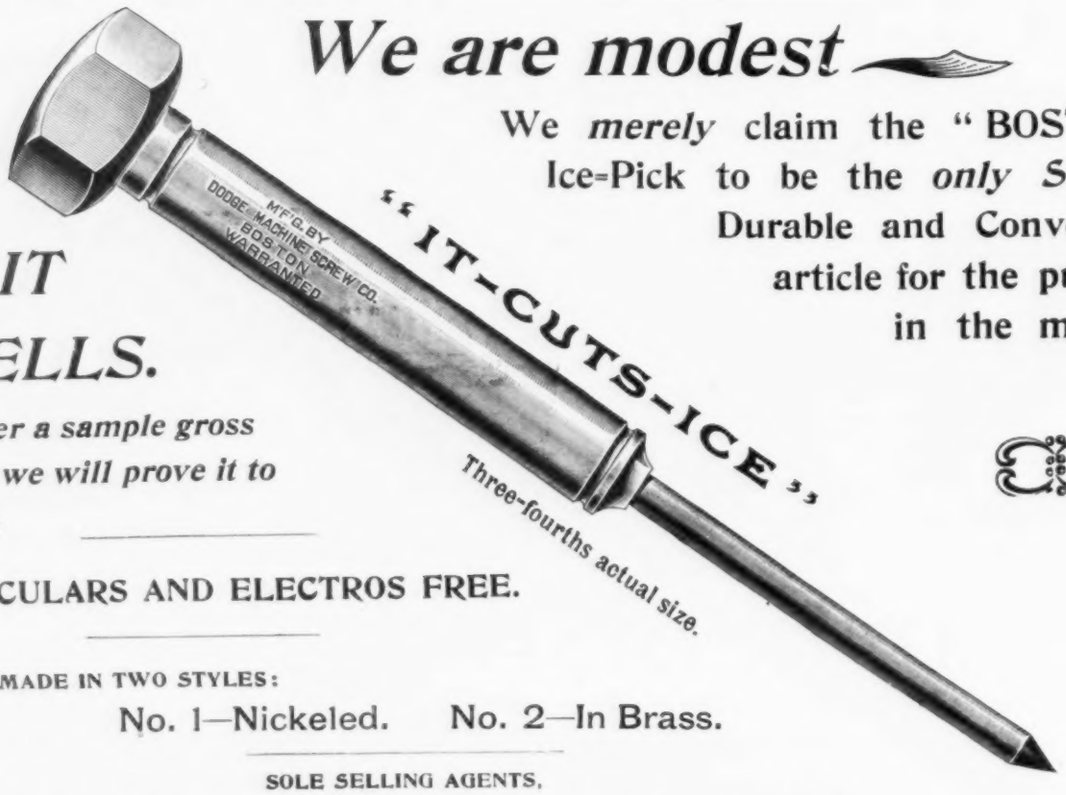

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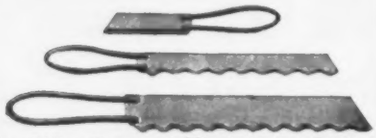

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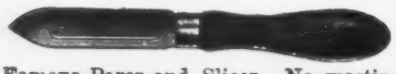

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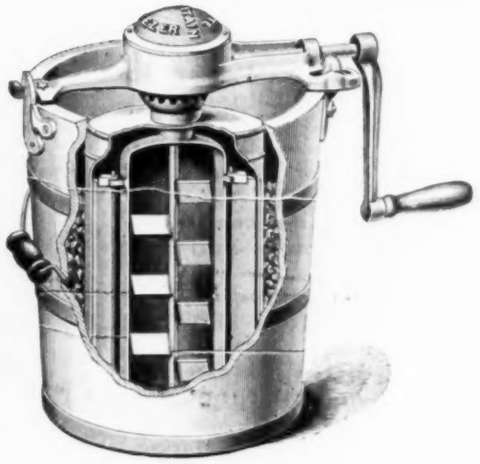

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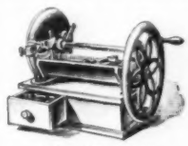

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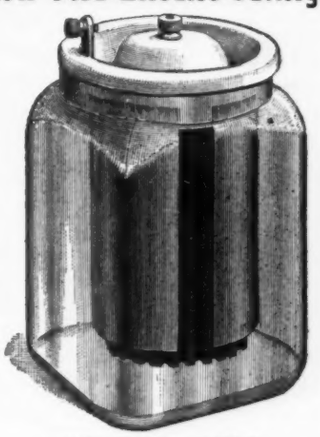

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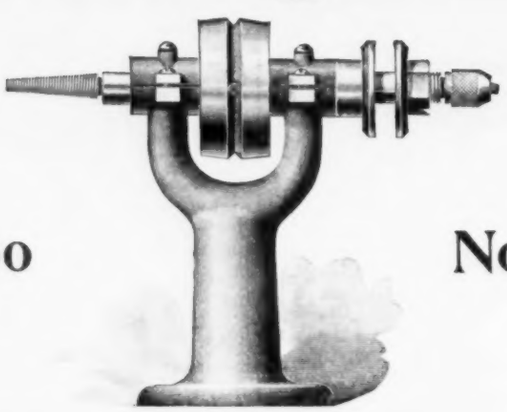

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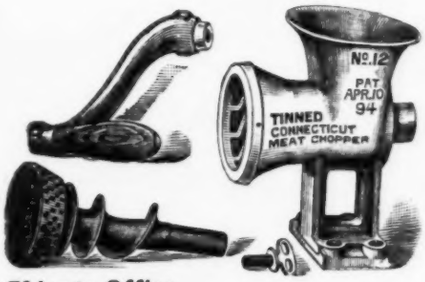

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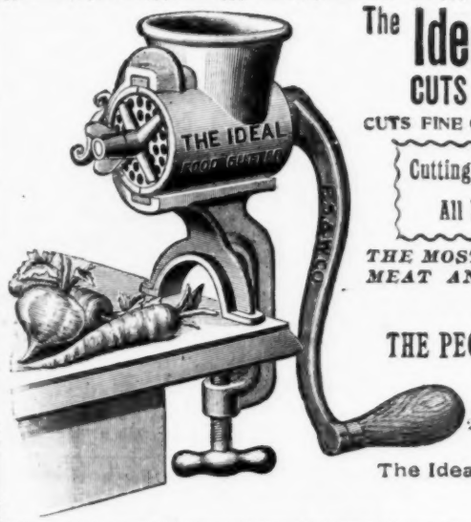

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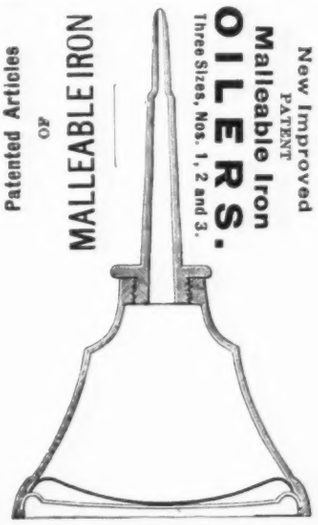

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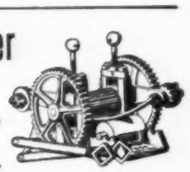

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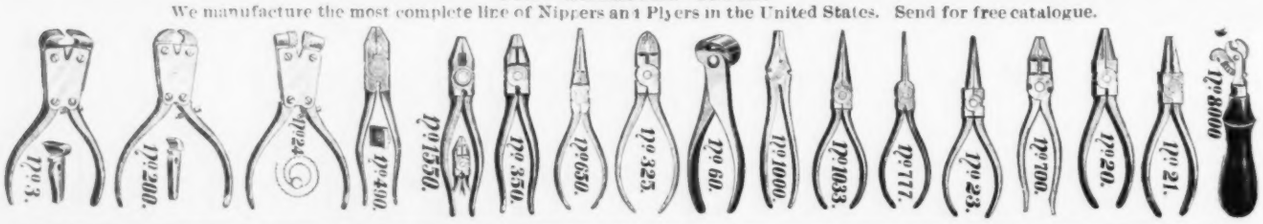

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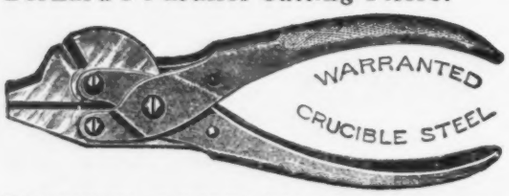

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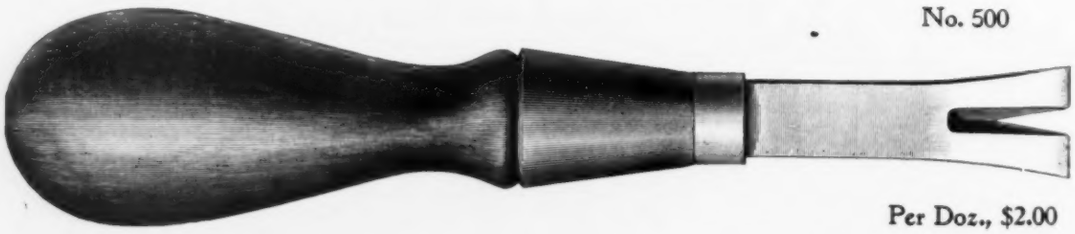

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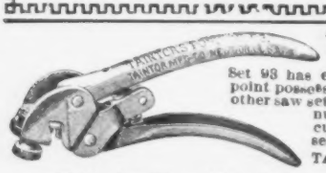

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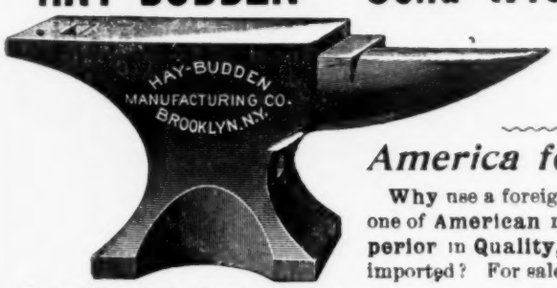

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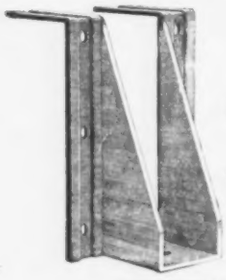

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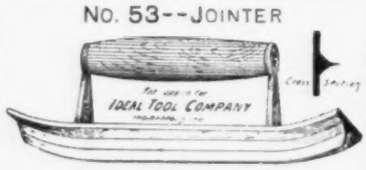

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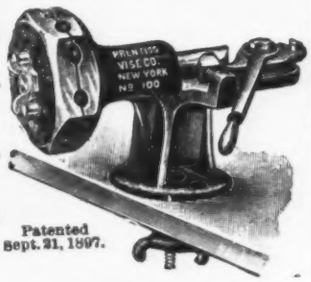

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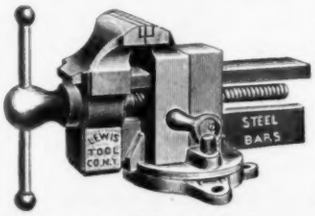

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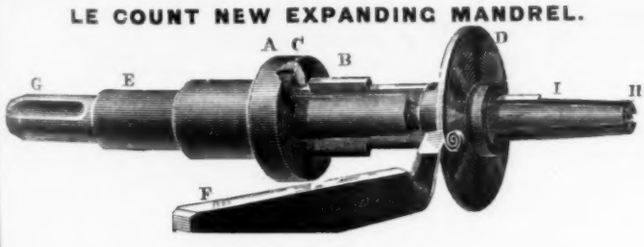

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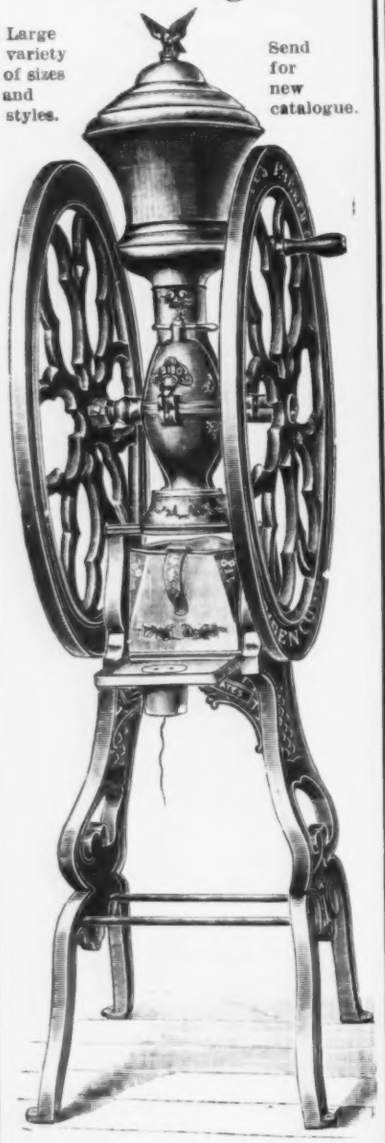

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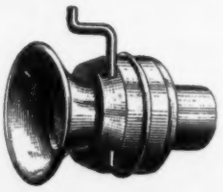

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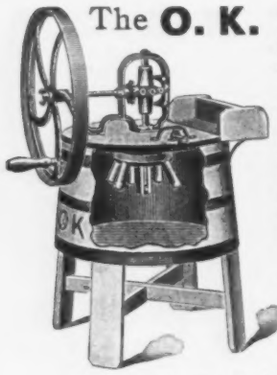

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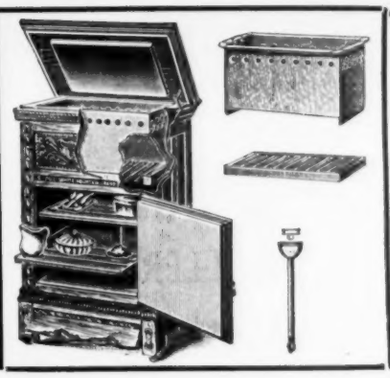

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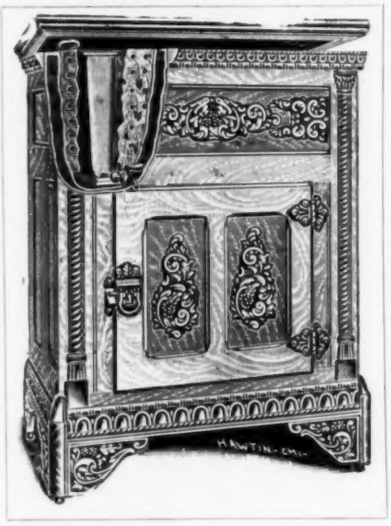

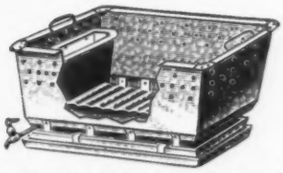

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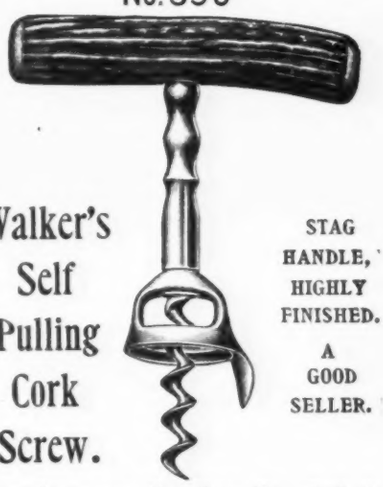

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We note some of the excellent features of the Yukon:

Thoroughly seasoned ash lumber.
Elegance of finish.
Carved panels.
Swinging and removable base board.
Solid bronze hardware, Roman gold finished.
Zinc lined. Patent casters.
Galvanized iron flues, ice rack and shelves.
The shelves being so constructed that small dishes placed upon them will not tip over.
Patent Trap, connected with waste pipe in bottom of provision chamber, where it is most accessible, both trap and waste pipe being easily removed, cleaned and replaced, without a back-breaking process or poking with a stick.
The insulation used is ***Granite Rock Wool*** and Charcoal Sheathing.

Buy the Yukon and you will have the best Refrigerator made as well as an elegant piece of furniture.

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Pin your faith to a line which has always proven a winner. It will have many valuable improvements for the season of 1899. Send for our latest catalogue. It is now ready. It will tell you all about it.

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Nos. 16 & 18 Chambers Street, New York.

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BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

STEEL DOOR HANGERS.

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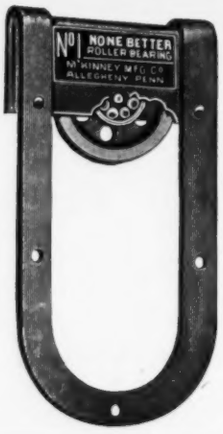

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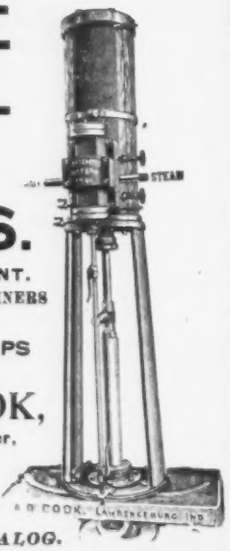

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Corrugations run full length.
Waterway full bore of hose.

It is made of *brass* and is seamless.
Can be shoved in old hose without loosening inside tube.
Heavy corrugations prevent pulling out.
It is very stiff and does not collapse.
Fastened in hose with either clamps or wire bands.

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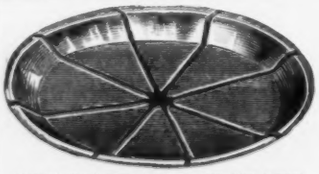

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Good Moving Articles in any Hardware Store.

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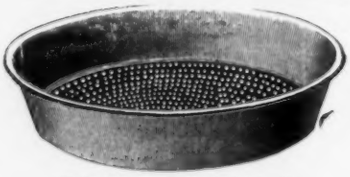

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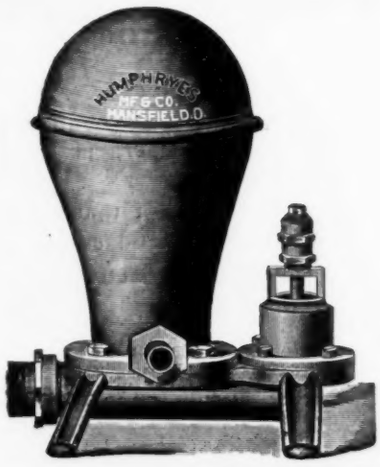

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The simple and effective operation of this machine, its great durability and usefulness in elevating water and conveying it to almost any desired distance, makes it one of the best apparatus ever offered. We would like to send you a circular fully describing its merits, and will be glad to do so if you will but write.

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All Kinds and Sizes.

"Hoosier" and "Fast Mail" Iron Pumps.

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Tubular Well Tools, Valves, Tubular Well Points, Drive Well Points, Working Barrels, Hose and Hose Goods, Pipe and Fittings, Hydrants and Street Washers, all kinds of Water Supply Goods.

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Largest and finest equipped factory in America for this class of goods.

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SPRAY PUMPS and NOZZLES.

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No stock of Spray Pumps is complete without GOULDS "POMONA."

It stands without a peer.
Notice the construction.

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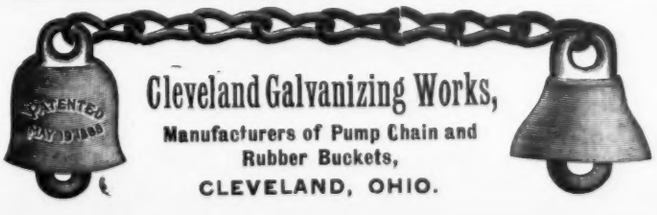

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Manufacturers of Pump Chain and Rubber Buckets,

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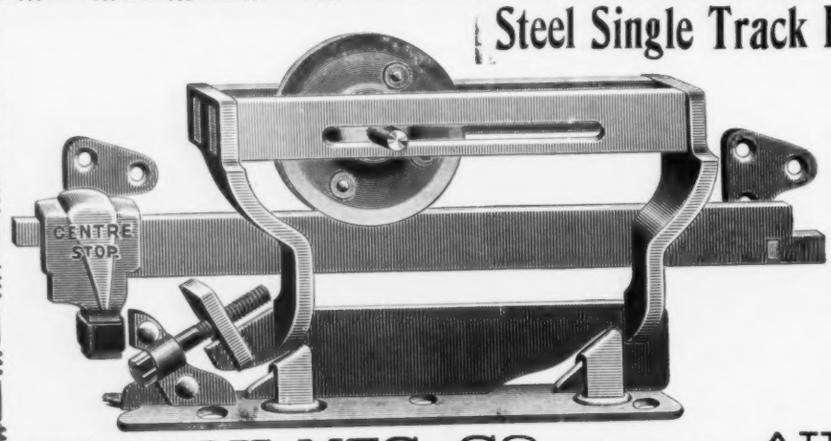
Steel Single Track House Door Hanger.



The facts are:

We make the most complete line of ***Door Hangers*** in the world.

We make the best that mechanical skill can produce for

House, Barn, Factory and Fire Doors,

regardless of size or weight.

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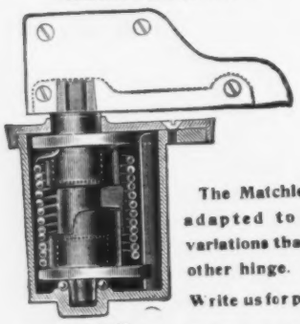
THE MATCHLESS
Double-Acting Floor Hinge.
BALL BEARING.



The Matchless is adapted to more variations than any other hinge.

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STARS MADE IN FIVE SIZES.

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Outfits for Repairing Boots and Shoes.

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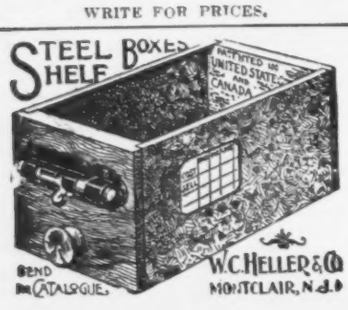

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Liquid Door Check and Spring.
PERFECTION ATTAINED AT LAST.

Entirely new in style and mechanism, **strong, simple and effective**, giving in results all the best achievements of other checks, together with new and valuable features only to be found in this.

It has a vertical case, with openings only at the top.

It has no plugs or caps screwed to the cylinder ends. It cannot leak. There is no way for the liquid to escape after the Check is applied.

The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material throughout.

It works to perfection, closing the door quickly and gently.

It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

Regular finish, Gold Bronze. No extra price for Silver Bronze or Dead Black when so ordered. Furnished Plated in Brass, Nickel, Copper or Silver, Plain or Oxidized, at a reasonable extra charge. No extra charge for Brackets where needed.

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Ventilators, Valve Stop Boxes, Hydrant Boxes, Meter Boxes, Washers, Special Sizes Iron and Lead Weights to Order and all Kinds of Castings.

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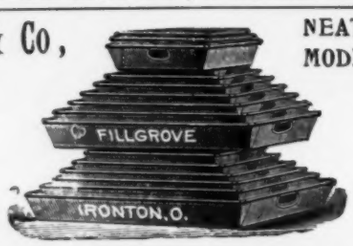
ARE SMOOTH
GOOD QUALITY



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Small Sizes

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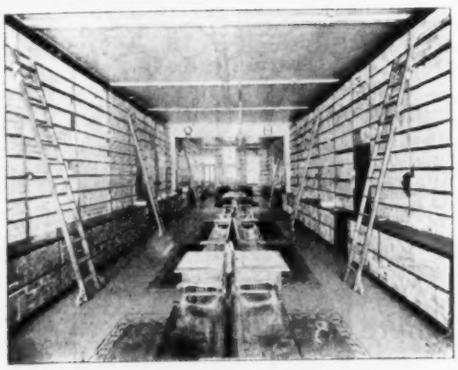

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Are adapted for any kind of a store.

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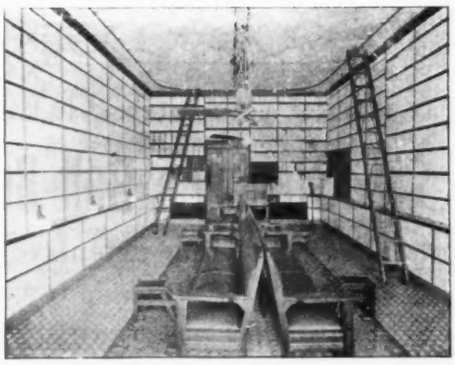

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LOCKS.

Cold Rolled Steel,
Accurate in Construction,
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WARNER LOCKS

Hardware.

Artistic in Design,
Elegant in Finish,
Moderate in Price.

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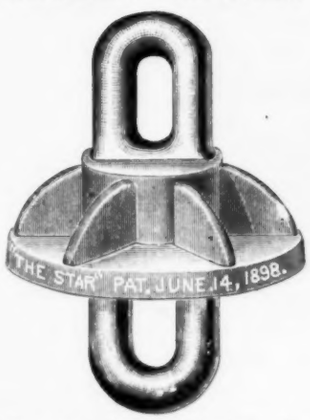

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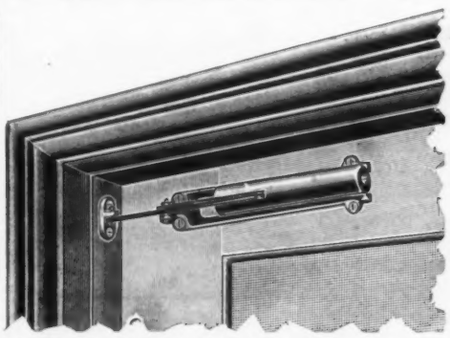

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An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

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Send for catalogue and prices of a large line of Mica specialties.

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We are fully prepared to
Estimate on
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Send us your Models,
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It is for your interest to carry a stock of

Stanley's Ball Bearing Steel Butts.

They are being extensively advertised, and you will have calls for them. Many architects are specifying them for *all* their best work. The reason is obvious. There is nothing else made in the way of hinges possessing so many merits. You know what these merits are? If not, send for illustrated booklet.

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JACK CHAINS,
SAFETY, PLUMBERS' and
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Now made by
The Turner & Seymour Mfg. Co.,
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Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware
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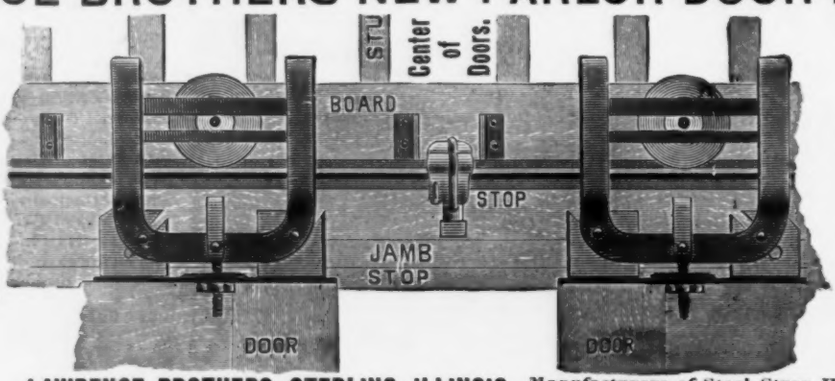
Steel Frame,

Vulcanized Hard Fiber Wheel,

Double Flanged Steel Rail.



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Hanger Frame will work on either side of Base Plate.

No Rights or Lefts.

No Metal Flanges to Rattle.

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LAWRENCE BROTHERS, STERLING, ILLINOIS, Manufacturers of Steel Strap Hinges, Door Hangers, Pulleys, and other Hardware Specialties.

ESPECIALLY ADAPTED FOR EXPORT TRADE.

Eureka WELDLESS CHAIN SPECIALTIES. CHEAPEST—STRONGEST—BEST.

Rapidly supplanting old style German chains in foreign markets.

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AUTOMATIC SCREEN DOOR CATCH.

These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. A counted counter sample furnished with first order of 2 dozen catches. Ask your jobbers for them. If they don't keep them, write us.

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THIS IS THE LINK.

Made on the principle of a square knot and ***cannot*** be pulled out.

Other wire links are now in the market, so if you want the *ONEIDA WIRE LINK CHAIN,* remember this shape.

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We buy entire stocks of merchandise at sheriffs', receivers', trustees', assignees', and manufacturers' sales. See our prices on Shovels, Hatchets, Axes, Rakes. Wrenches, Locks, Butts, Vises, Nails, Wire, Iron Roofing, Tools, etc. Write at once for catalogue.

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It Costs Nothing

for a Catalogue, and you will find if you allow us to figure with you for the placing of one or more of our ladders in your store, that it will ***cost you less*** to transact your business than at present.

All live, wide-awake, up-to-date dealers are buying them. Why not you?

They are durable, well made, cheap and are becoming an absolute necessity in all stores. They are made to order, and will fit all kinds of shelving.

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MAKERS OF THE

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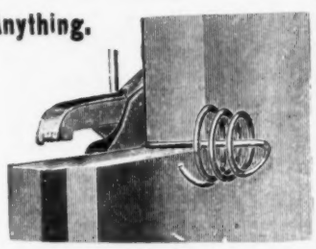
Holds Anything.



Display your goods and increase your sales.

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Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for 15 years.

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THE BICYCLE STEP LADDER.
Especially adapted for Hardware Stores

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**
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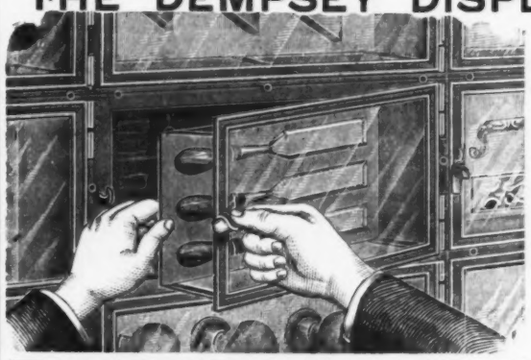

Save stock and sample from dust, dirt and moisture.

No rust, no soiled stock.

Stock is never handled until sale is made.

Removable sample boards.

The finest fixture made and costs no more than the old style.

See full description in *The Iron Age* of September 22d.

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LOCK-CORNER SHELF BOXES.
Show Cases, &c.
FOR THE HARDWARE TRADE
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HARDWARE SHELF BOXES.

Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request.
We also make a general line of Paper Boxes.
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LIVE HARDWARE MEN USE
PERFECT SHELF BOXES
WE MAKE
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Tackle Blocks.

Automatic Lock.
Steel Case—galvanized
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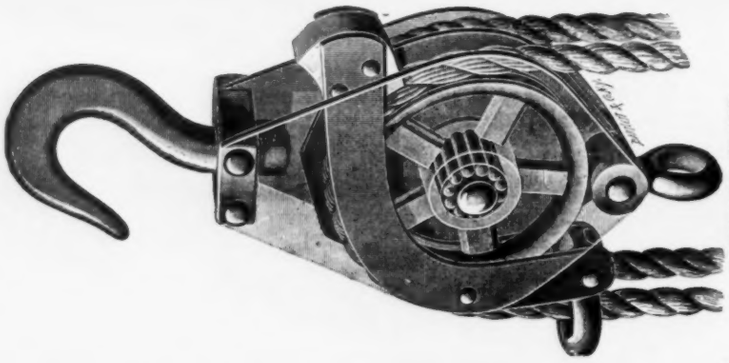

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LANE BROTHERS CO.,
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THE
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BLOCK (Patented).

This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
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Caldwell Sash Balance.

It stands the test of time.

Caldwell Mfg. Co.,
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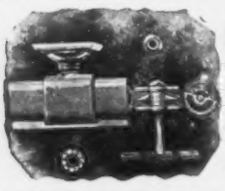

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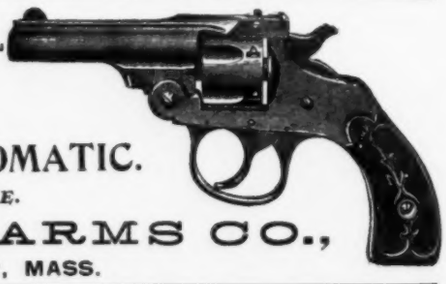

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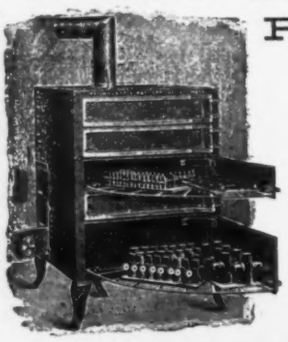

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One closing the oven when the other is open.

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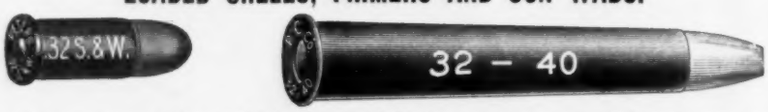

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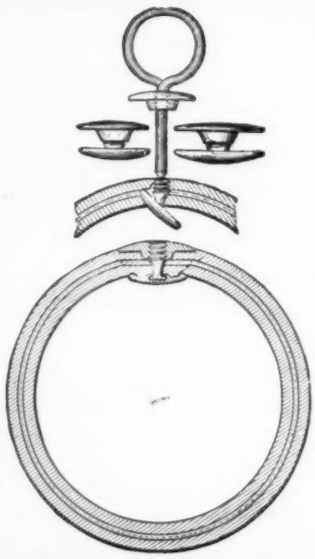

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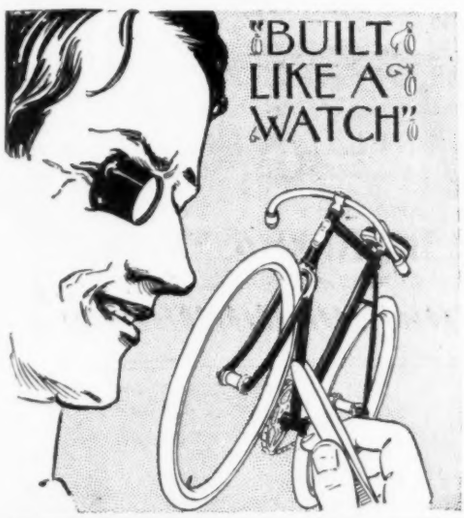

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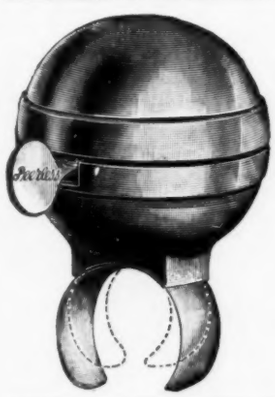

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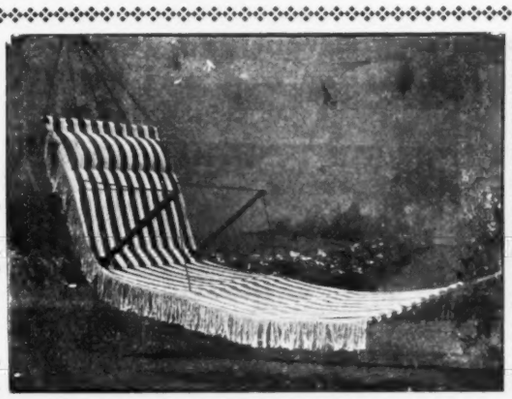

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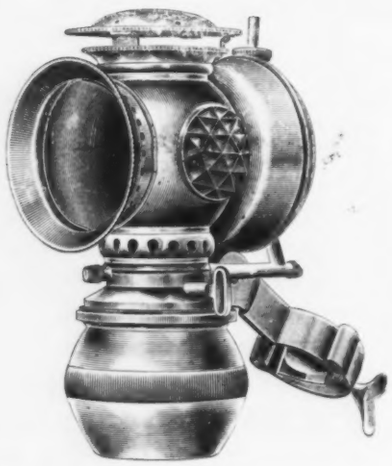

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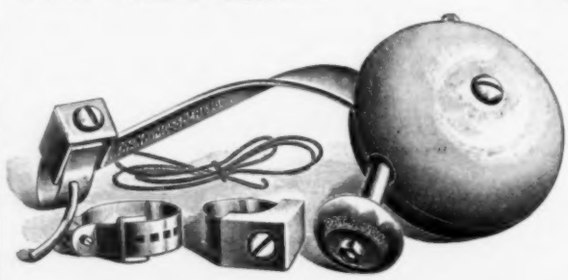

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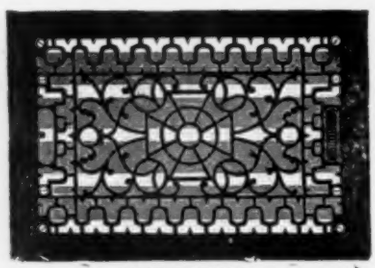

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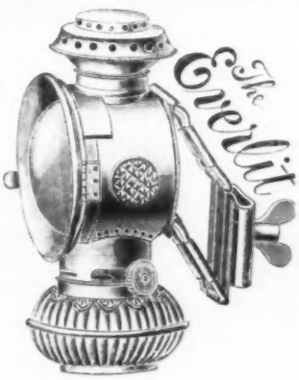

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It is made all right,
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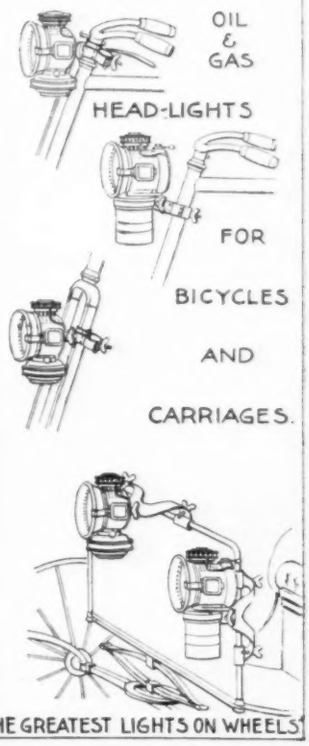

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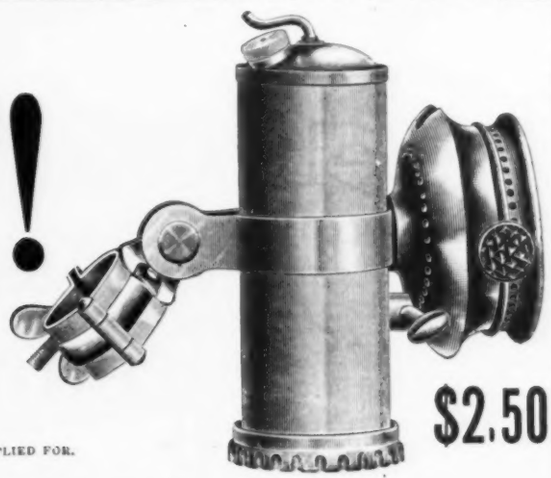

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ARE ADJUSTABLE.
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Best made for bicycle stores, public buildings, offices, stores, churches, schools, factories, in fact anywhere. Wall and floor holders. Various styles furnished in any finish. Write for prices.
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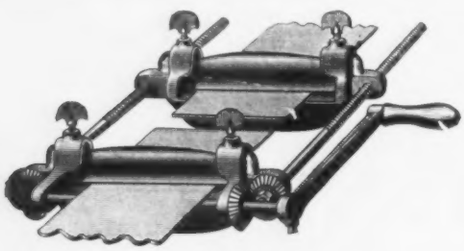

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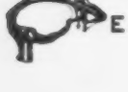

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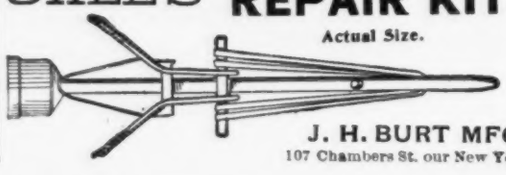

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All Carefully Boxed—Shelf goods in fact.

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All Fine Sellers—Not a line which costs money to carry and moves slowly.

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6 inch barrel,	open sights,	list price	$5.00,	weight	10 oz.
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This is a Fine Pistol for Light Target Work.

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Made from Bright Cold Rolled Steel.

IN SIZES FROM 1¾-IN. TO 4-IN. DIAMETER.

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A stock of both unfinished and plated constantly on hand. Prices upon application.

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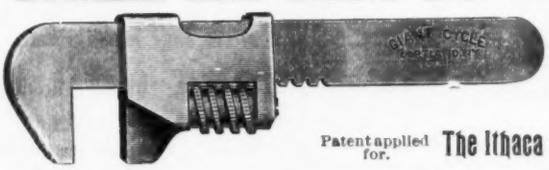

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Finish unequaled.
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WHAT YOU GET FOR YOUR MONEY IS AS IMPORTANT AS THE AMOUNT YOU PAY.

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Hand Elevators and Dumbwaiters

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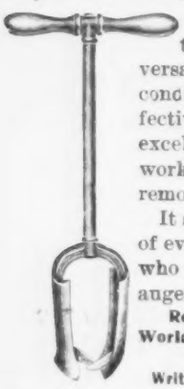

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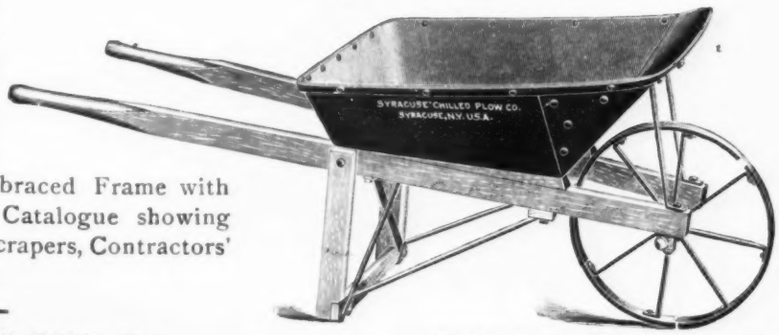

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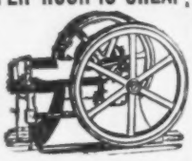

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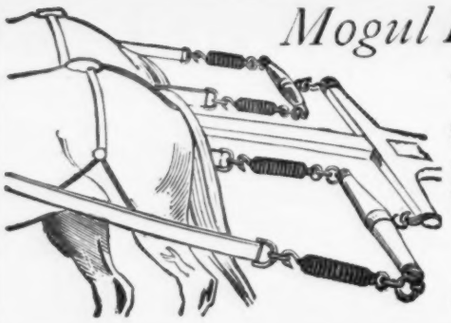

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Rand Drill Co., 100 Broadway, N. Y.

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Hungerford U. T., Brass & Copper Co. 121 Worth St., N. Y.

Bridge Builders.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.

Bronze, Manganese.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze (Tobin).
Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y

Brushes and Brooms.
Hendee Wire Brush Co., Milwaukee, Wis
Osborn Mfg. Co., Cleveland, O.

Buckets, Rubber.
Cleveland Galvanizing Wks., Cleveland

Buggies.
Parry Mfg. Co., Indianapolis, Ind.

Builders' Hardware.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
Stanley Works, New Britain, Conn.
U. S. Steel Lock Co., Clinton, Iowa.

Bulldozers
Williams, White & Co., Moline, Ill.

Burnt Leather.
Ensworth, L. L. & Son, Hartford, Conn.

Butchers' Tools.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D. Mfg. Co., Auburn N. Y.
Eccles, Richard Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hartley & Graham, 313 & 315 Broadway, New York.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N. Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1131 Broadway, N. Y
Enterprise Foundry Co., Cincinnati, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McLain, J. H. Co. Canton, O.
McNeal Pipe & Foundry Co., Philadelphia, Pa
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

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Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cements
Warner, Chas. Co., Wilmington, Del.

Cement Workers Tools.
Ideal Tool Co., Indianapolis, Ind.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth st., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.
Railway Supply Co., St. Louis, Mo.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Bennett Geo. B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crayons, Foundry.
Virginia Soapstone Slate Pencil Co., Charlotteville, Va.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Whiting Foundry Equipment Co., Chicago, Ill.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Illinois Cutlery Co., Decatur, Ill.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Hoy-Budden Mfg Co., Brooklyn, N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg. Co., Cleveland, O.

Dog Collars.
Union Hardware Co., Torrington, Conn.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Larimer Mfg. Co., Pittsburgh, Pa.
Norton Door Check & Spring Co., Boston.
Pullman Cash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Dripping Pans.
Filligrove Bros. & Co., Ironton, O.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Williams, White & Co., Moline, Ill.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor Conn.
General Electric Co., Schenectady, N. Y.
Hanson & Van Winkle Co., Newark, N. J.
Westinghouse Electric & Mfg Co., Pittsburgh, Pa.
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass

Electrical Repairing.
Cleveland Armature Works, Cleveland, Ohio.

Electric Batteries.
Penn Electric Mfg. Co., Penn. Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa.
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
New Castle Engineering Works, Pittsburgh, Pa.
Sague, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
New Era Iron Works, Dayton, Ohio.
Palmer, Bros. Mianus, Conn.
Thompson, T. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Lane & Bodley Co., Cincinnati, O.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engine and Boiler Supplies.
Sherwood Mfg. Co., Buffalo, N. Y.

Engravers.
Mugford, A., Hartford, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets.
Litchfield, J. M., Brooklyn, N. Y.
McKenna, A. & T., Pittsburgh, Pa.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn

Fence Ratchets.
Bowen Cable Stay Fence Co., Norwalk, O

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago, Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
McLain, E. S. & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Philadelphia, Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Sherwood Mfg. Co., Buffalo, N. Y

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Fly Traps
Meyers, Fred. J. Mfg. Co., Hamilton, O.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Bultman, F. H. & Co., Cleveland, O.
Clough, R. M., Tolland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glass Cutting Boards.
Lufkin Rule Co., Saginaw, Mich.

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Glue.
Baeder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hardware Co., Torrington, Conn.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, L. E., Middletown, Conn

Hand Milling Machines.
Costlio, J. E. Machine Works, Brooklyn, N. Y.

Hangers, Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Cmas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain.
North Bros. Mfg. Co., Philadelphia, Pa.
Parks & Parks, Troy, N. Y.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tisbout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
Morey, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Pa.
Spindel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rome Mfg. Co., Rome, N. Y.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Household Specialties.
Parks & Parks, Troy, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Graham, John H. & Co., 113 Chambers St., N. Y.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.

Insulating Materials.
Vulcanized Fibre Co., Wilmington, Del.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lutenberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, Manufacturers.
Whitney, A. R. & Co., 29 B'way N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 20 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O.

Job Lots, Hardware.
Browne & Mansfield, 245 Broadway, N. Y.
Chicago House Wrecking Co., Chicago, Ill.

Joist Hanger.
Von Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio.
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
U. S. Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Barsh & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 13 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Farrel Foundry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm C. & Sons Mch. Co., St. Louis, Mo.
King & Walker Co., Madison, Wis.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Poulterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Man Hole Forming Tools.
Haworth Mfg. Co., Liberty, Ind.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Metallurgists.
Britton, J. Blodgett & Co., Warrenton, Va

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Attachment for Lathes.
Adjech Mfg. Co., Phila., Pa.

Milling Machines.
Adams Co., Dubuque Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence, Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gilem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill
Howard & Morse, 45 Fulton St., N. Y.

Molding Machines.
Pridmore, Henry E., Chicago, Ill.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg Co., Pittsburgh, Pa.

Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Atherton, Jesse, Auburn, R. I.
Crescent Mfg. Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Malta-Henley Co., 20 Warren St., N. Y.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark N. J.
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester, Mass

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

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Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Johns H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, Walter & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Forceps.
Reimers, J. N. & Co., Davenport, Iowa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N. Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Plyers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Post Hole Diggers.
Iwan Bros. Separator, Ill.

Poultry Fencing.
De Kalb Fence Co., De Kalb, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dieneli & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Klidder, R. E., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati O

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pump Chains.
Cleveland Galvanizing Wks., Cleveland.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 80 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Meyers, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
King & Walker Co., Madison, Wis.
Long & Allstatter Co., Hamilton, Ohio.
Merrick C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works, Scranton, Pa.

Railway Supplies.
Railway Supply Co., St. Louis, Mo.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg. Co., Fond du Lac, Wis
Gurney Refrigerator Co., Fond du Lac, Wis.
Mackinaw Refrigerator Co., 106 Chambers St., N. Y.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N. Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham, 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jones & Laughlins, Ltd, Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Roasters and Bakers.
Shepard, Sidney & Co., Buffalo, N. Y.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper
Thompson, Hugh L., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bampers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Lufkin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co., 29 Chambers,

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.
Enterprise Foundry Co., Cincinnati, O.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
New England Specialty Co., No Easton, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket,
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co., Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shelving.
Warren, J. D. Mfg. Co., Chicago, Ill.

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Ship Chandlery.
Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Union Hardware Co., Torrington, Conn.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners.
Union Hardware Co., Torrington, Conn.

Slate Hooks.
Moseley & Stoddard Mfg. Co., Rutland.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Solder.
Markle Lead Works, St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City, N. J.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N. Y

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O.
Dunbar Bros., Bristol, Conn.
Lord Bros. Mfg. Co., Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich.
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
D'Este & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
D'Este & Seeley Co., Boston, Mass.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.
Bennett, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
D'Este & Seeley Co., Boston, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport.

Manufacturers' Agents.
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Stee Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Caro, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Jones & Lamson Mch. Co., Springfield, Vt.
Jarecki Mfg. Co., Erie, Pa.
Oster Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Stokers.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Cleveland, O.
Warren, J. D. Mfg Co., Chicago, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stoves, Oil, Vapor & Gasoline.
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tack Claws.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

Tapes.
Lufkin Rule Co., Saginaw, Mich.

Tap Holder.
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Besly, C. H. & Co., Chicago, Ill.
Butzerfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Proudman Bros., Meriden, Conn.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Tea and Coffee Pots.
Rome Mfg. Co., Rome, N. Y.

Tea Kettles.
Rome Mfg. Co., Rome, N. Y.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Terne Plate.
American Tin Plate Co., Chicago, Ill.

Tin Mills.
Phillips, F. R. Sons, Phila., Pa.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo.

Tin Plate.
American Tin Plate Co., Chicago, Ill.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore

Tire Repair Outfits.
Burt, J. H. Mfg. Co., Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.,

Tools.
Athol Machine Co., Athol, Mass.
Besly, C. H. & Co., Chicago, Ill.
Brown, R. H. & Co., New Haven, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls, Millers Falls Co., 93 Reade, N. Y.
Schollhorn, Wm. Co., New Haven, Conn
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
Stevens J., Arms & Tool Co., Chicopee.
Tower & Lyon, 95 Chambers St., N. Y.
Tuck Mfg. Co., Brockton, Mass.

Tools, Blacksmith and Wheelwright.
Butts & Ordway Co., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg. Co., Greenfield Mass

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Schneider & Trenkamp Co., Cleveland, O.

Tote Boxes.
Clark, W. J. & Co. Salem, O

Trouser Guards.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Trowels.
Bishop, Geo. H. & Co., Cincinnati, O.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.

Trucks.
Boston & Lockport Block Co., Lockport.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N. Y

Tub Hoops.
Weaver, Palmer & Richmond, Rochester, N. Y.

Tube Cutters.
Groves & Haines, Philadelph'a, Pa.

Tubes, Seamless Drawn Copper, Brass and Bronze.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phœnix Tube Co., Brooklyn, N. Y.

Tubing, Steel.
Leng's, John S. Son & Co., 4 Fletcher St.
National Tube Wks. Co., McKeesport, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.

Twist Drills.
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.

Upholsterers' Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Turner & Seymour Mfg. Co., Torrington.

Valves, Gas, Water and Steam.
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
Crosby Steam Gage & Valve Co., Boston.
Eastwood Wire Mfg. Co., Belleville, N. J.
Jenkins Bros., 71 John, N. Y.
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Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
Wood, R. D. & Co., Philadelphia, Pa.

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Parry Mfg. Co., Indianapolis, Ind.

Ventilating Fans.
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Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

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Athol Machine Co., Athol, Mass.
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Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
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Lane Bros. Co., Poughkeepsie N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn

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Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson & Smith, Worcester, Mass.

Washing Machines.
Brammer, H. F. Mfg. Co., Davenport, Ia.

Water Gates.
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Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

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Carroll Muzzle Co., Carroll, Iowa.

Well Auger.
Iwan Bros., Streator, Ill.

Well Supplies.
Cook, A. D., Lawrenceburg, Ind.

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American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Wind Mills.
Flint & Walling Co., Kendallville, Ind.

Window Cord.
Samson Cordage Works, Boston, Mass.

Window Fasteners.
Stanley Works, New Britain, Conn.

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Cleveland Wire Spring Co., Cleveland, O.
Dillon-Griswold Wire Co., Sterling, Ill.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Stewart Wire Co., Easton, Pa.
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Trenton Iron Co., Trenton, N. J.
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Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
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Scheeler's Sons, Buffalo, N. Y.
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W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.
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Utica Drop Forge & Tool Co., Utica, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.

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Mossberg & Granville Mfg. Co., Providence, R. I.

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Wire Goods Co., Worcester, Mass.

Wire Forming Machinery.
American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
Bates Machine Co., Joliet, Ill.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.
Shuster, F. B. Co., New Haven, Conn.

Wire Mats.
U. S. Wire Mat Co., Decatur, Ill.

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American Steel & Wire Co., Chicago, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Pittsburgh Wire Co., Pittsburgh, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton.
Whitney, A. R. & Co., 29 Broadway, N. Y.

Wire Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

Wire Parts.
Jenkinson, R. C. & Co., Newark, N. J.

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American Steel & Wire Co., Chicago, Ill.
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Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
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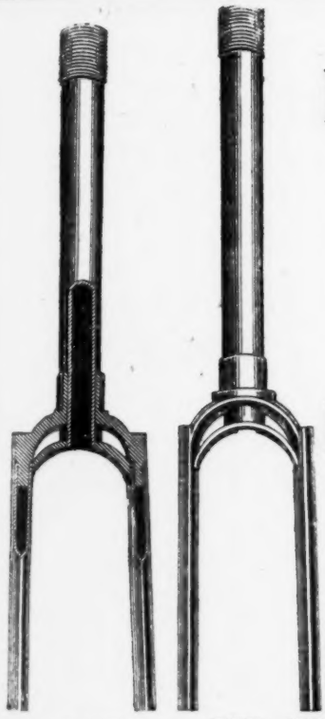

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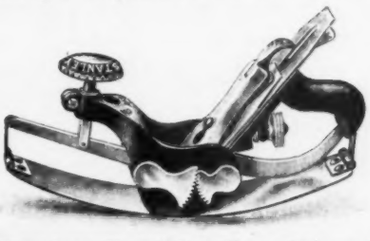

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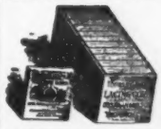

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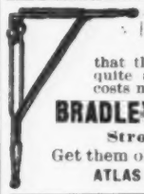

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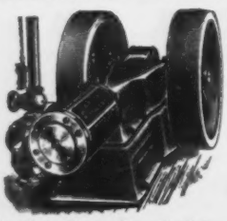
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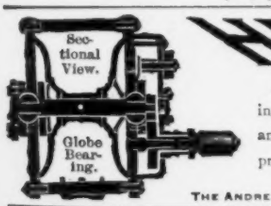

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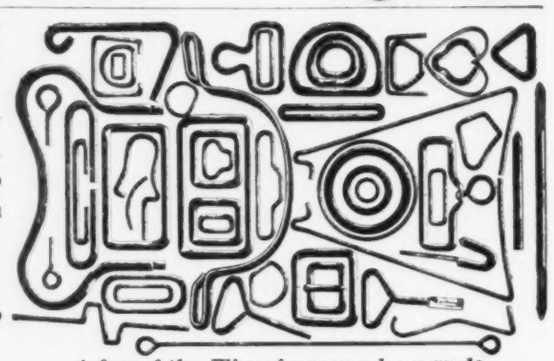

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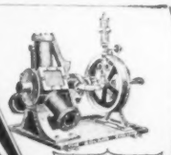

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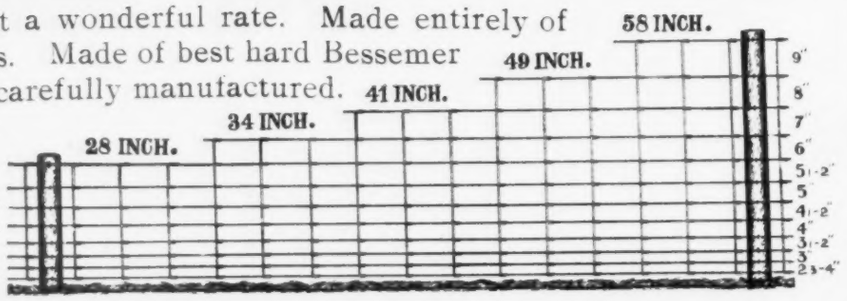

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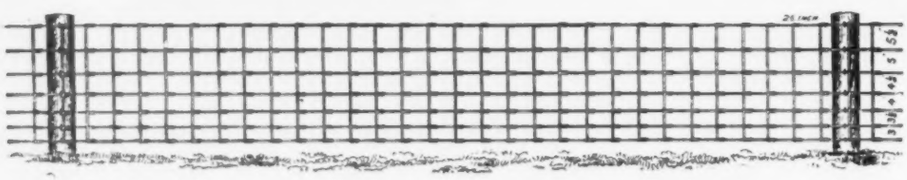

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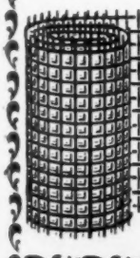

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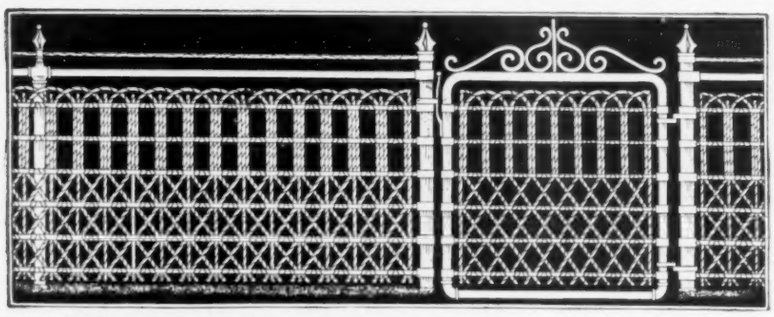

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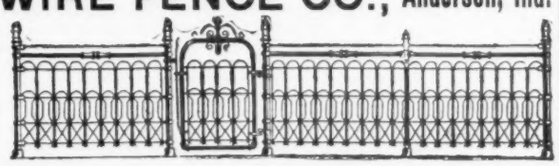

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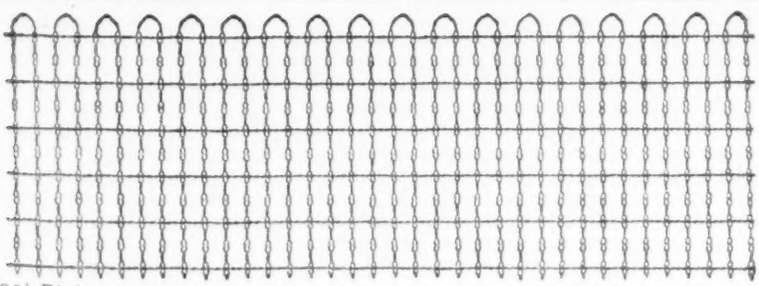

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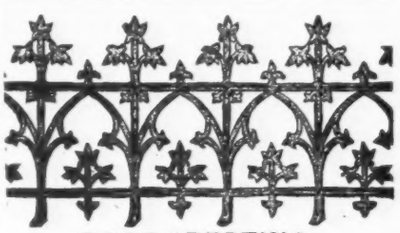

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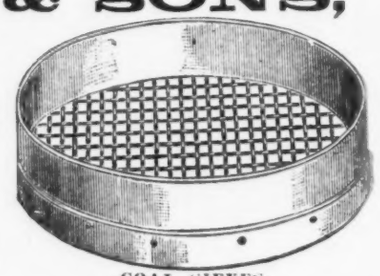

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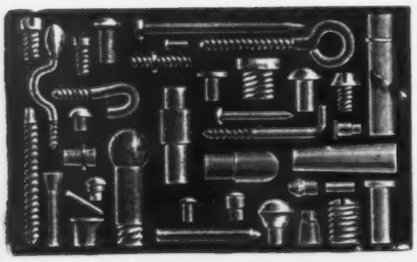

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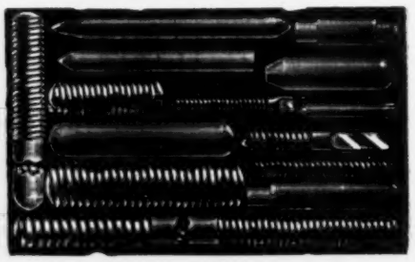

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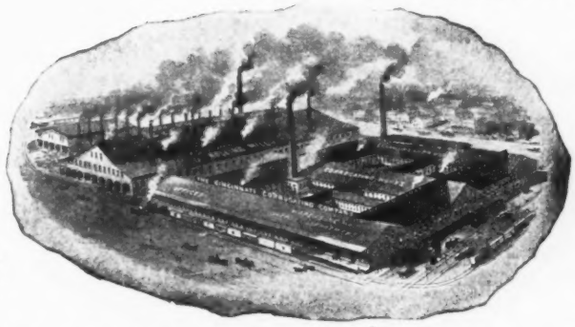

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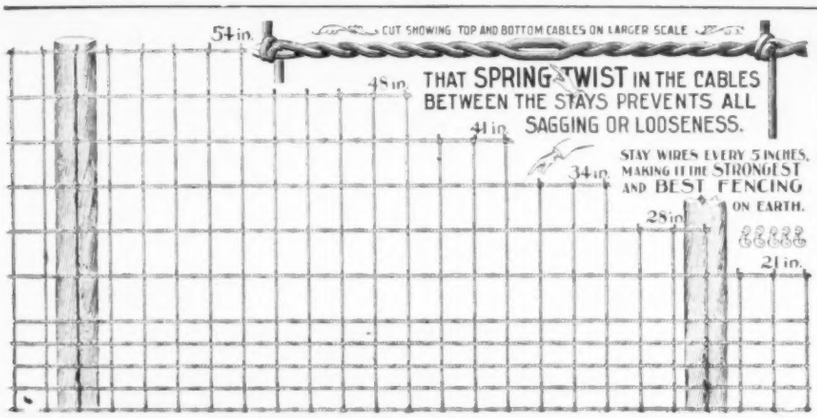

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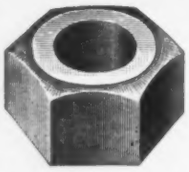

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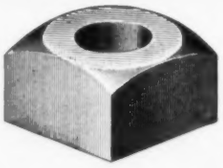

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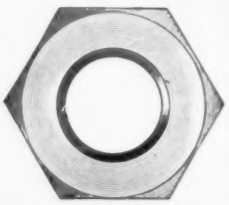

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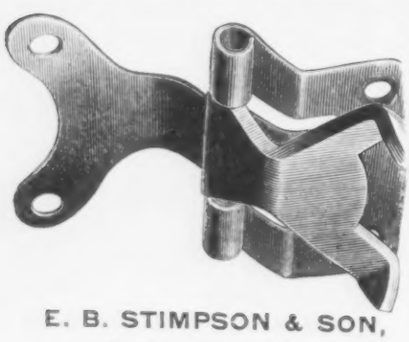

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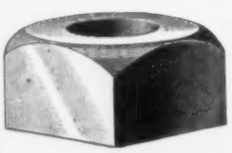

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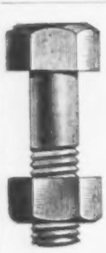

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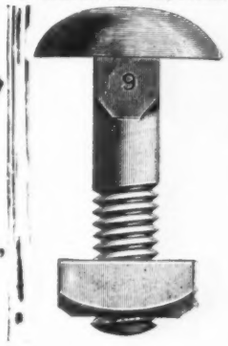

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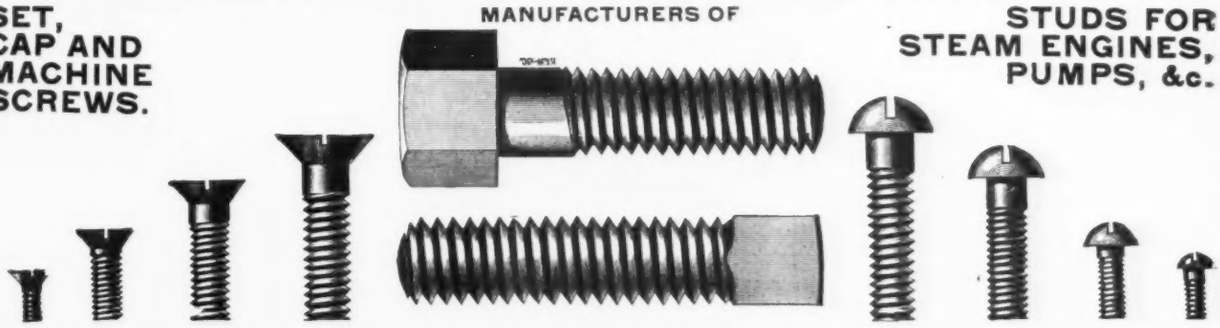

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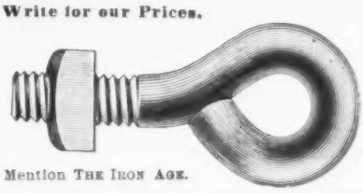

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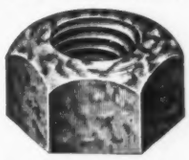

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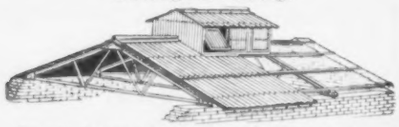

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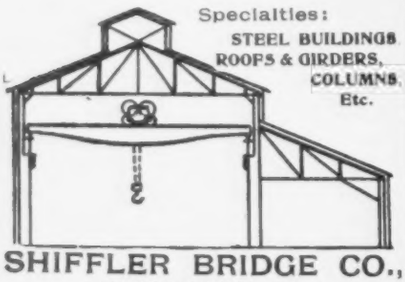

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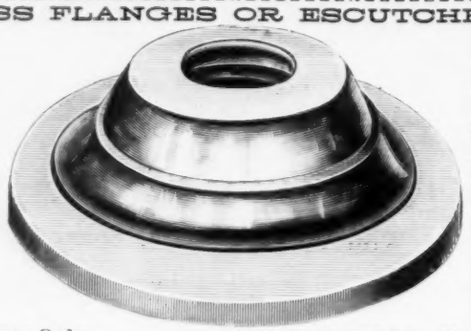

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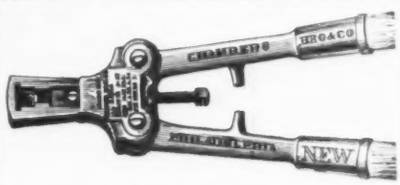

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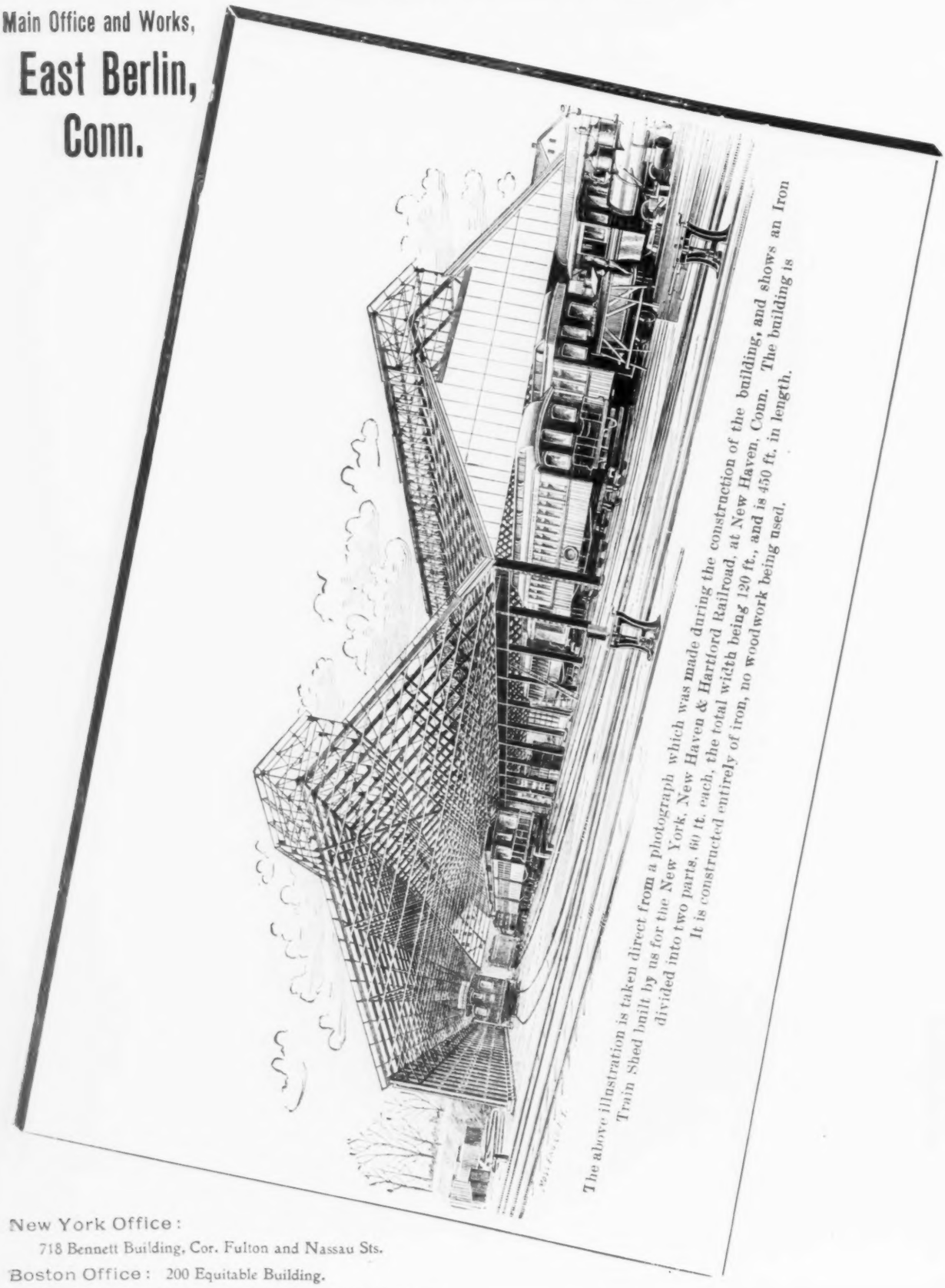

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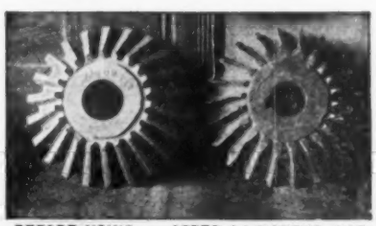

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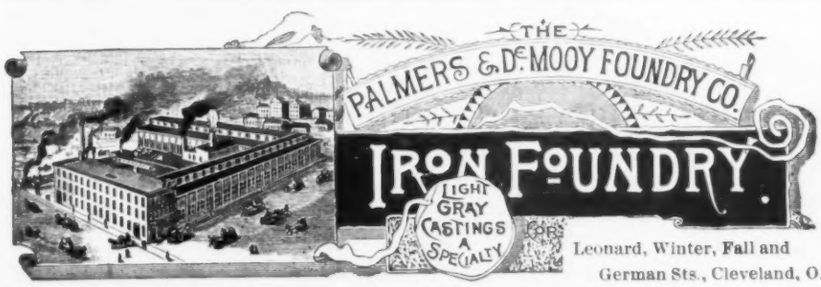

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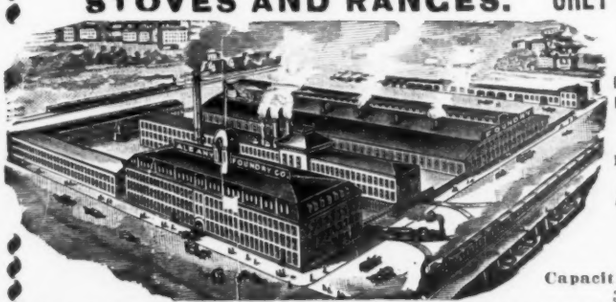

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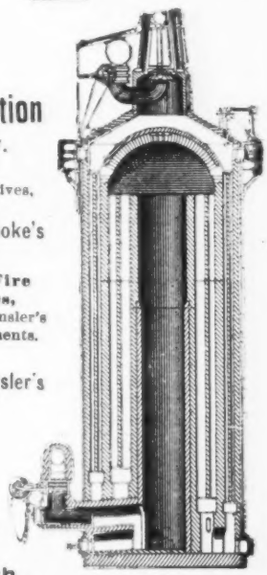

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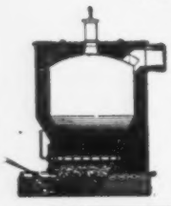

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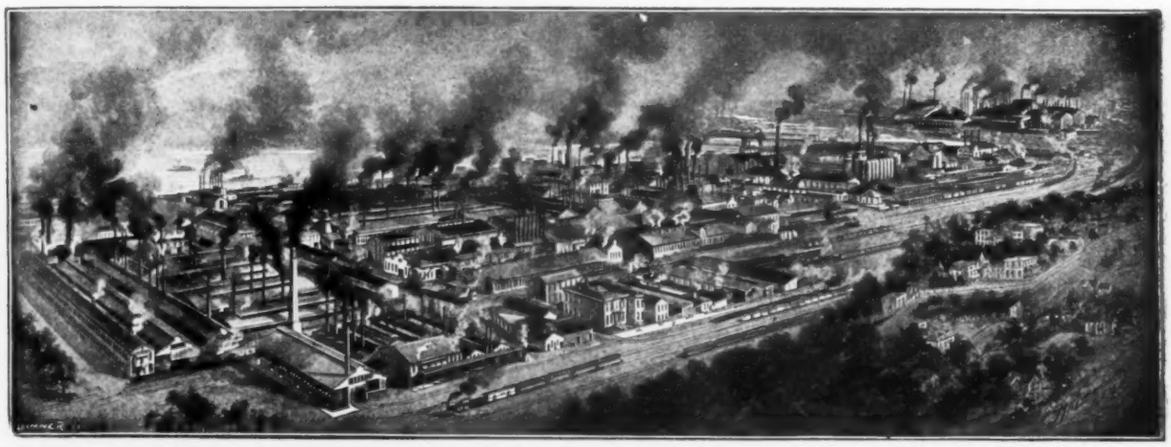

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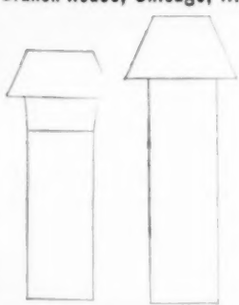

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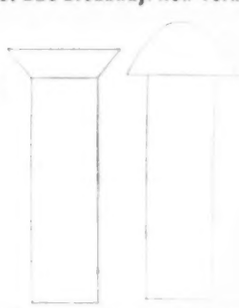

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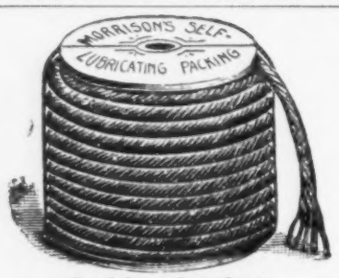

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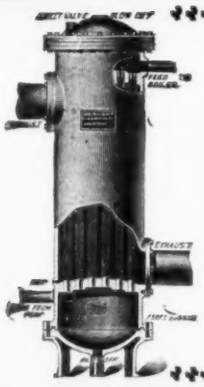

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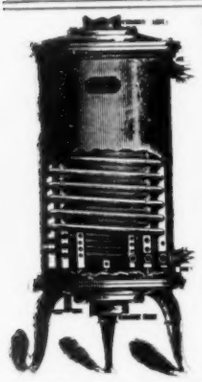

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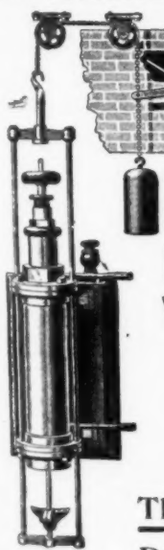

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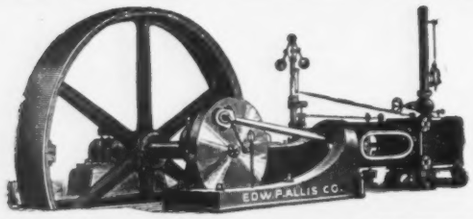

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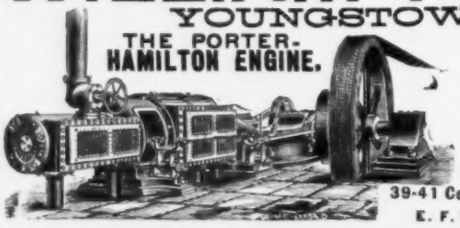

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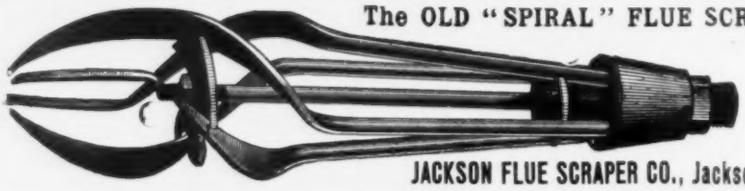

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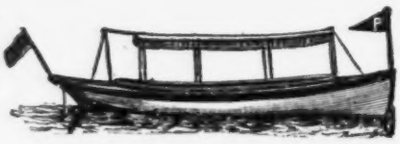

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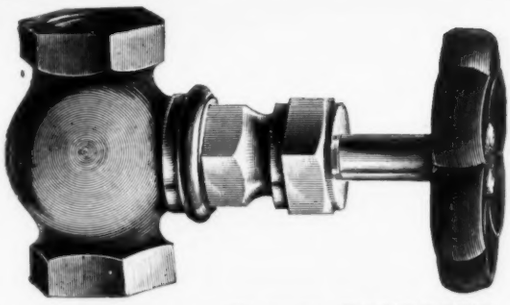

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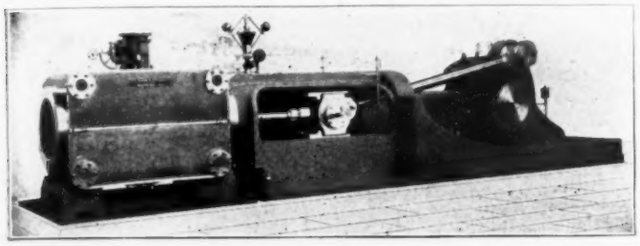

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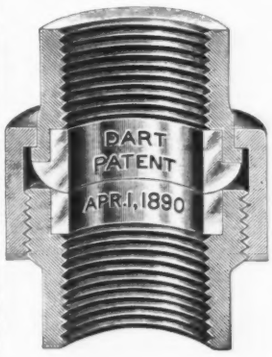

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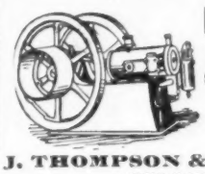

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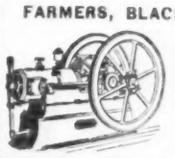

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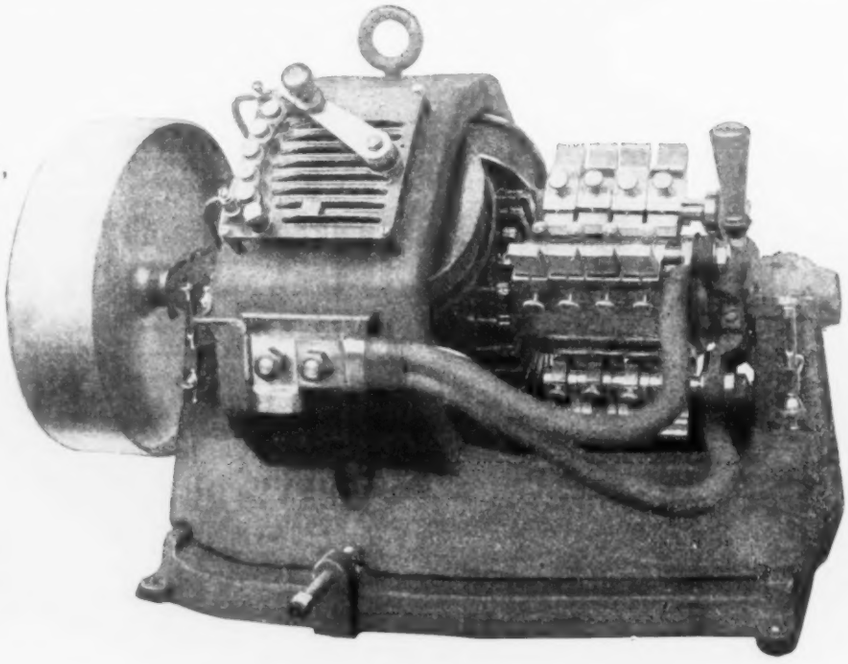

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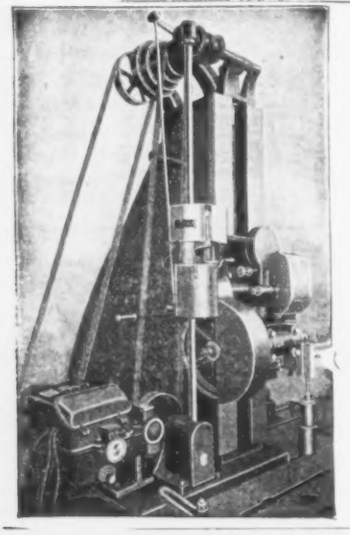

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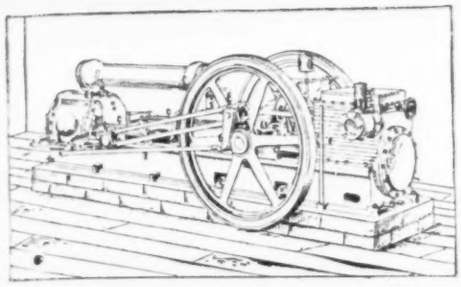

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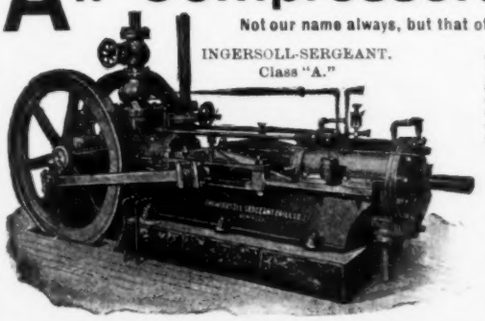

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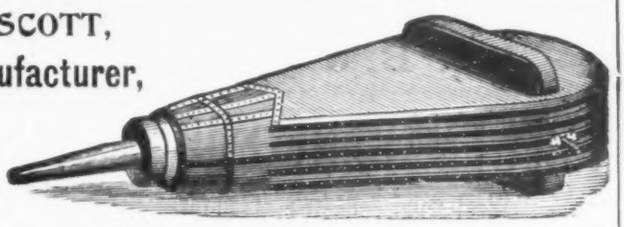

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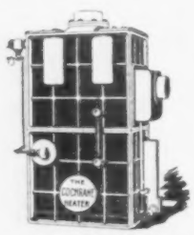

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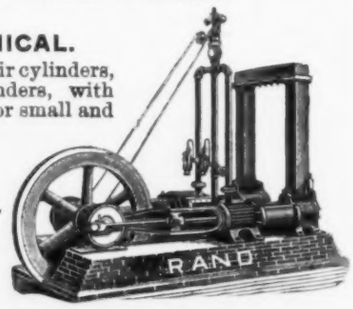

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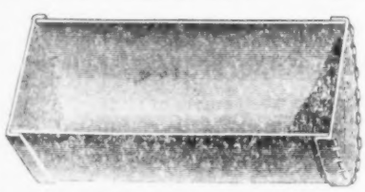

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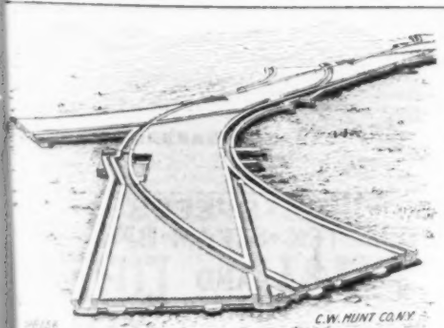

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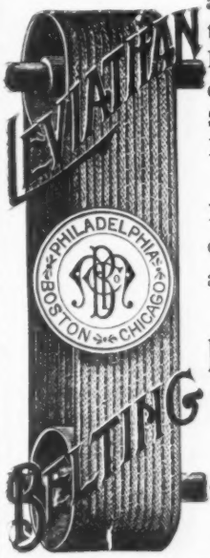

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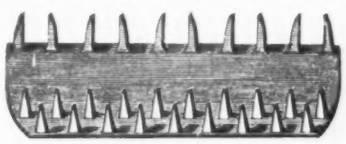

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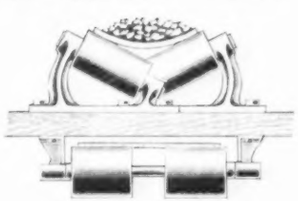

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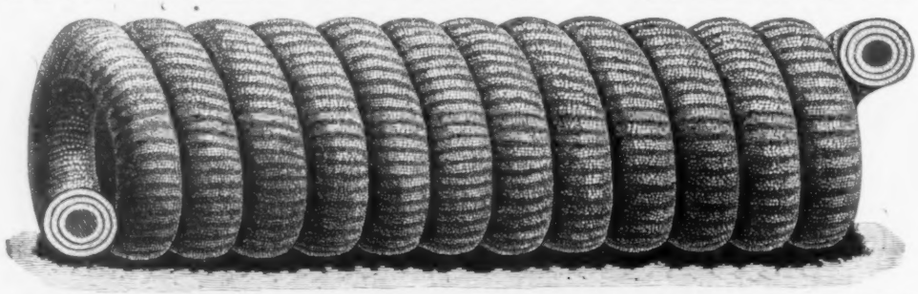

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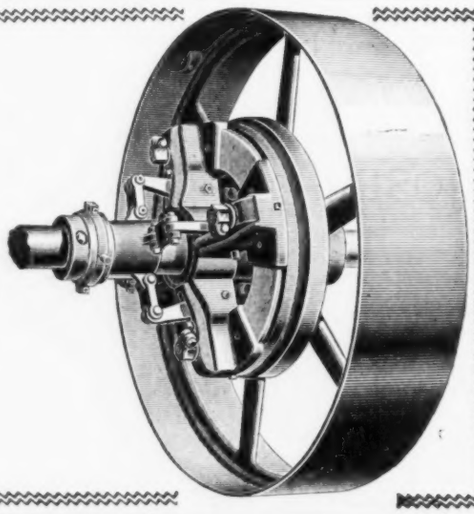

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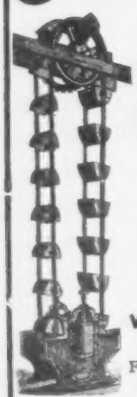

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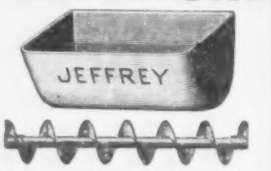

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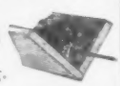

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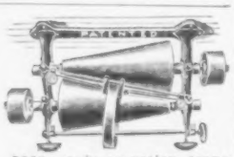

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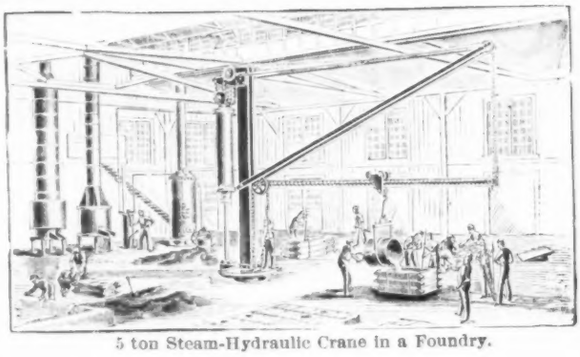

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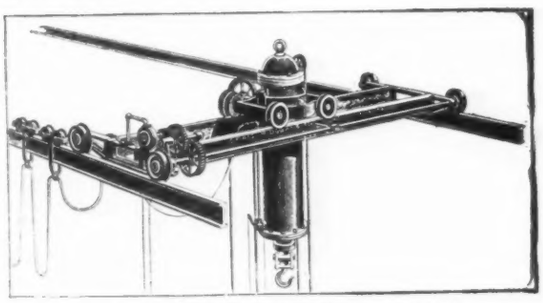

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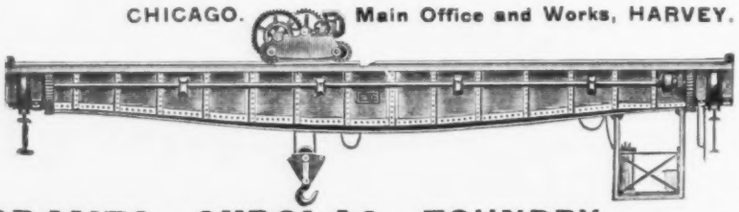

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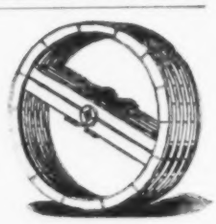

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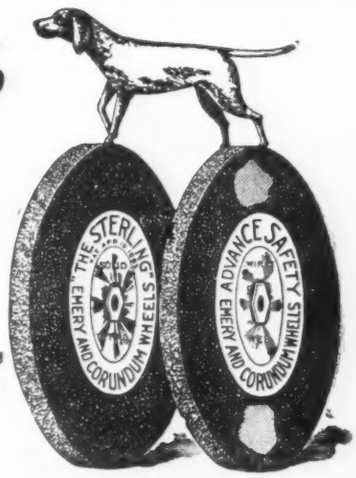

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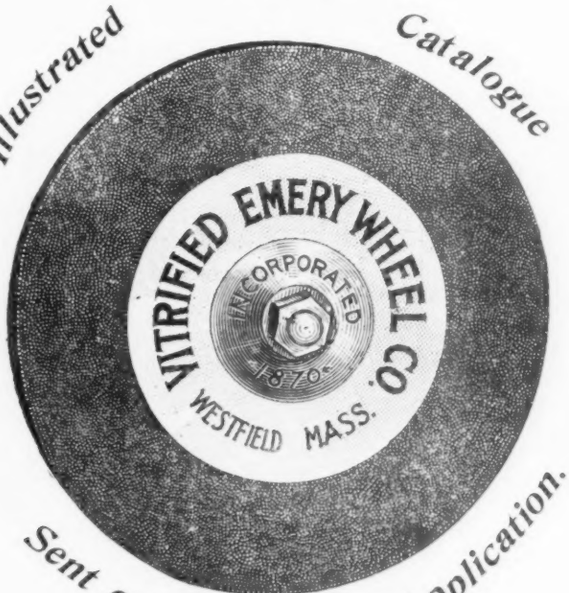

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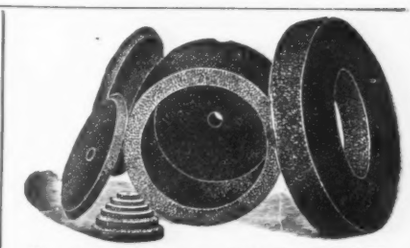

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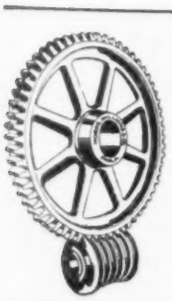

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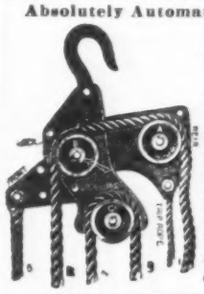

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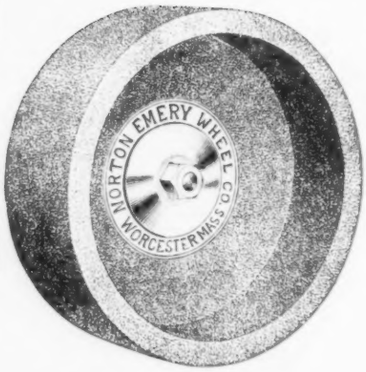

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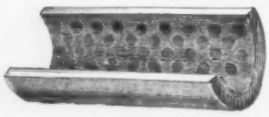

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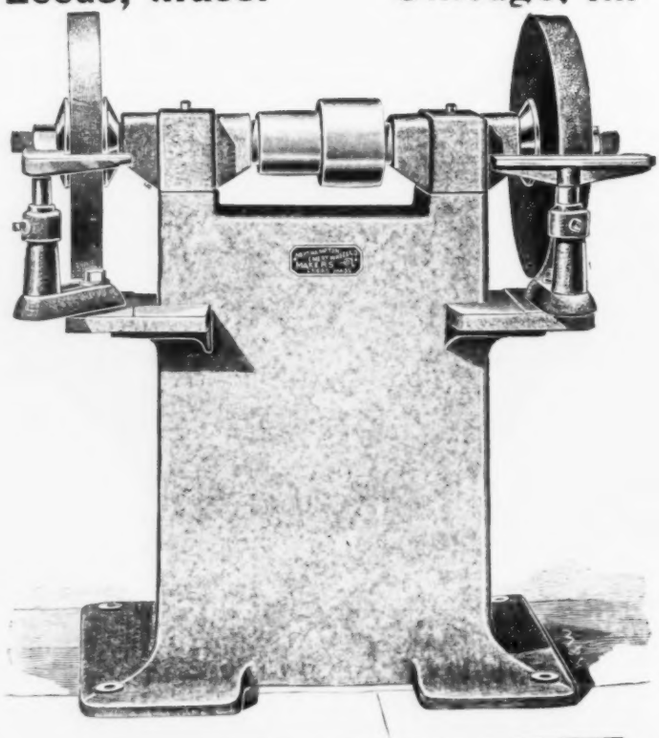

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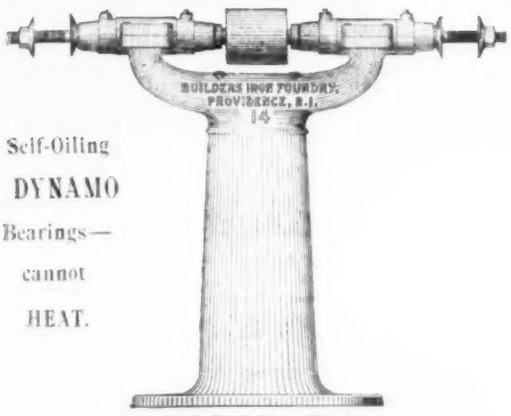

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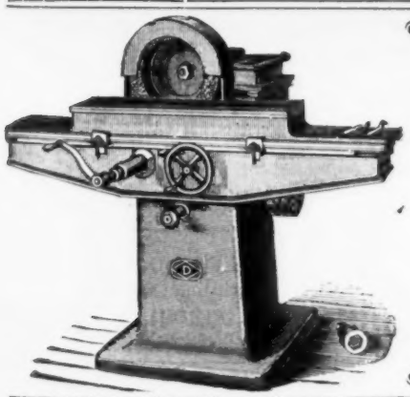

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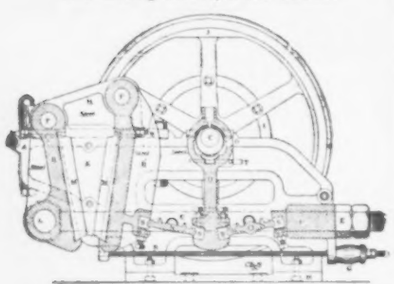

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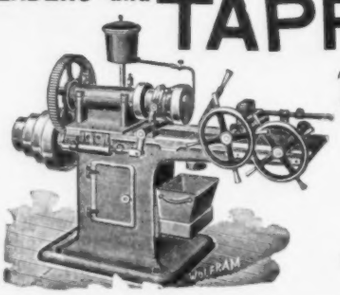

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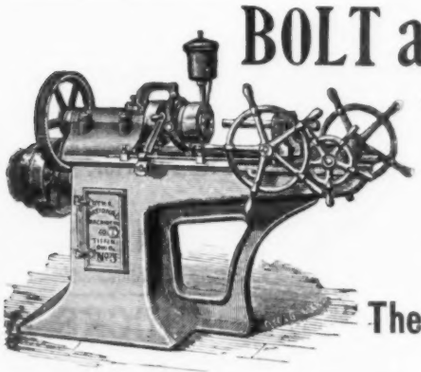

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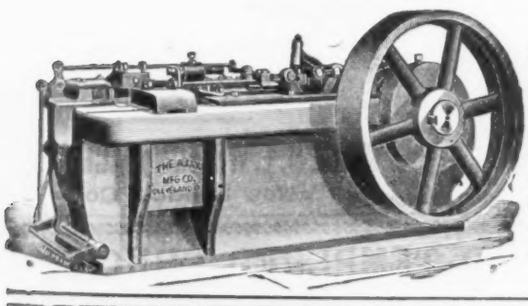

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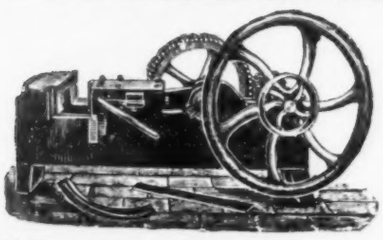

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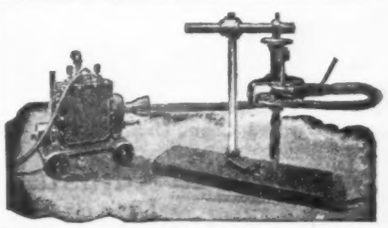

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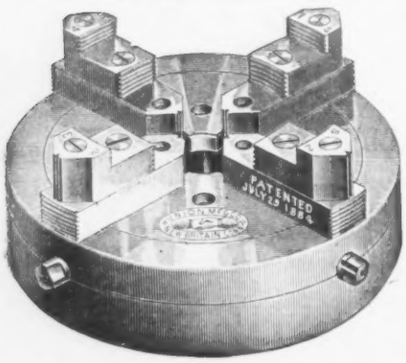

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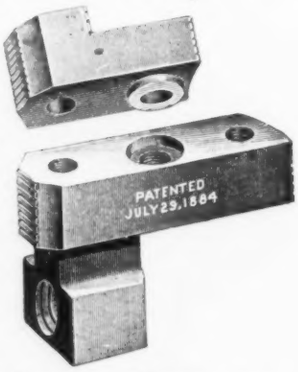

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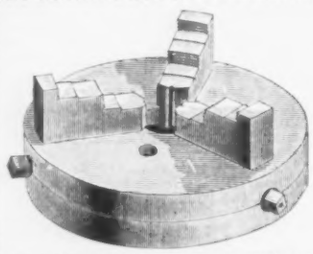

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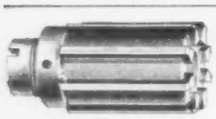

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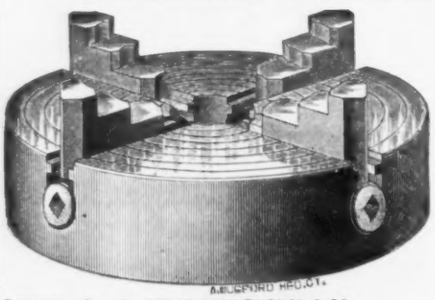

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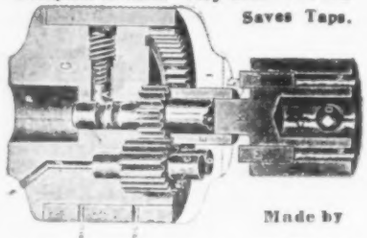

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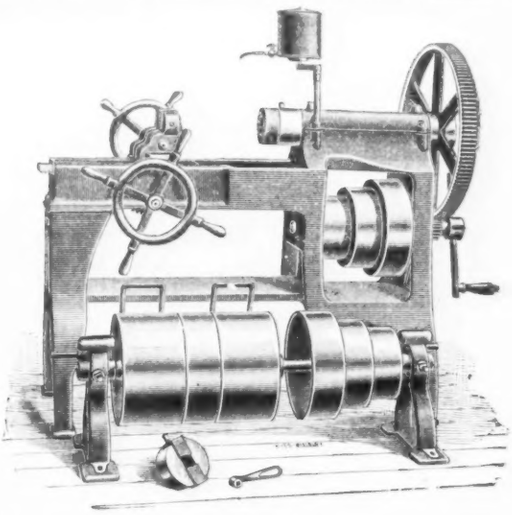

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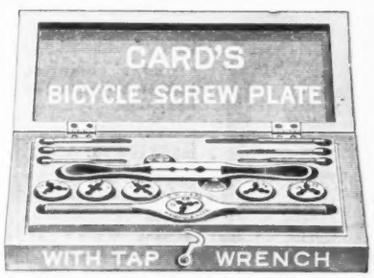

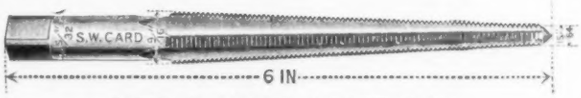

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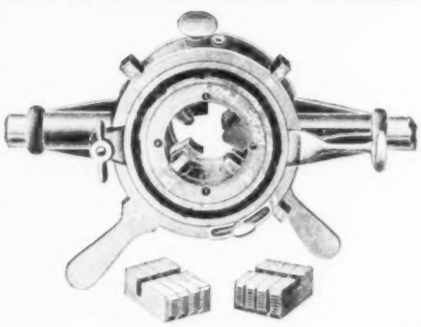

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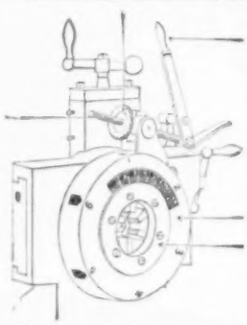

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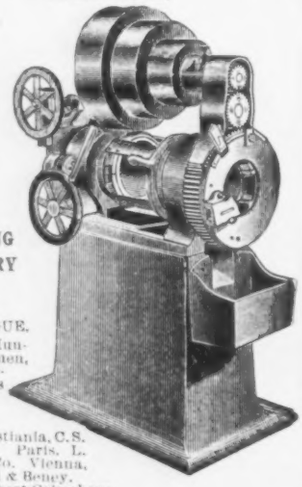

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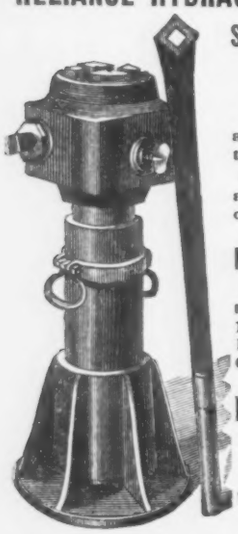

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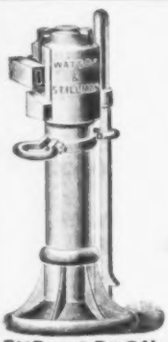

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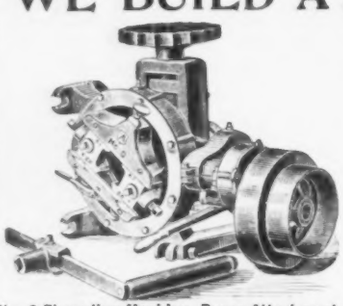

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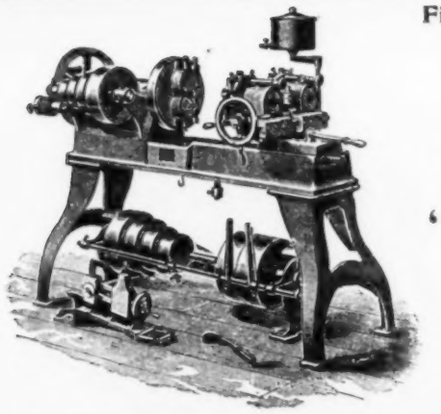

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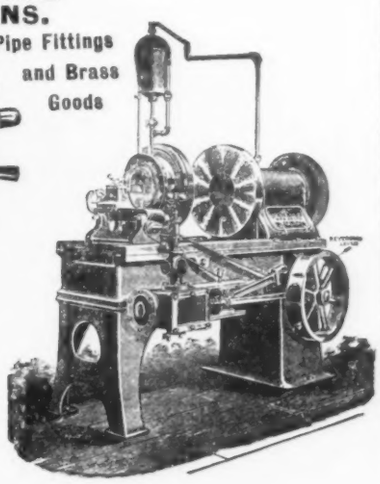

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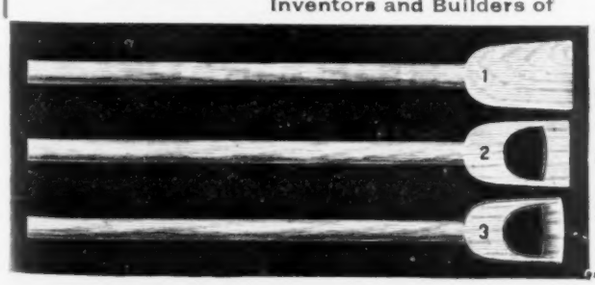

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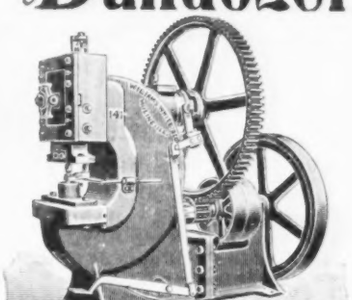

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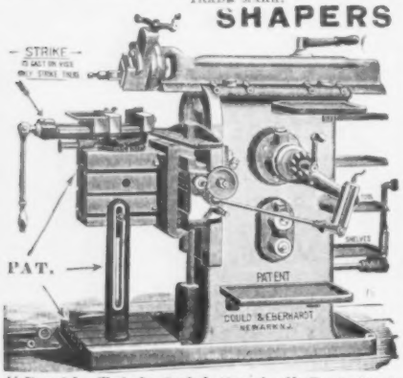

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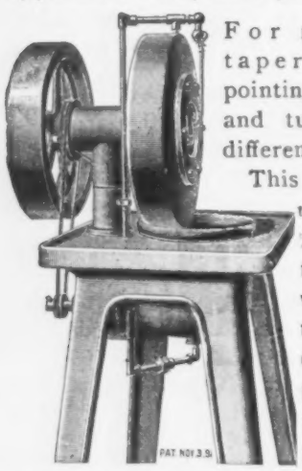

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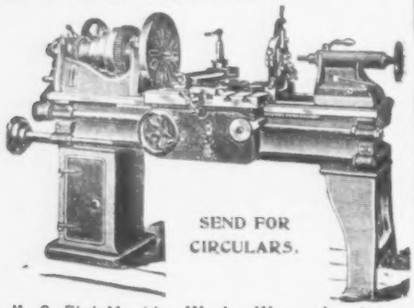

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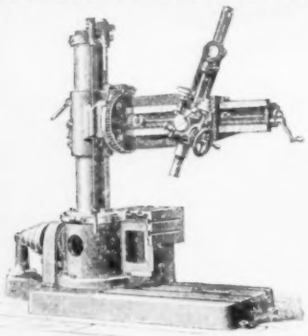

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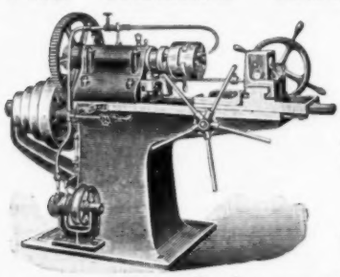

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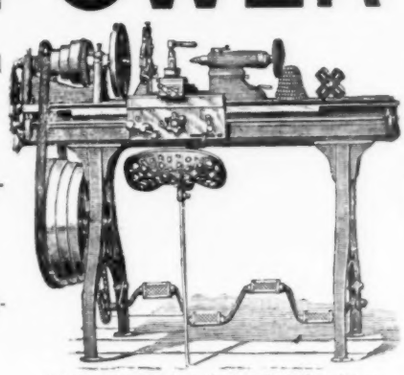

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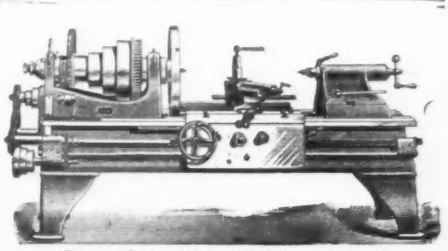

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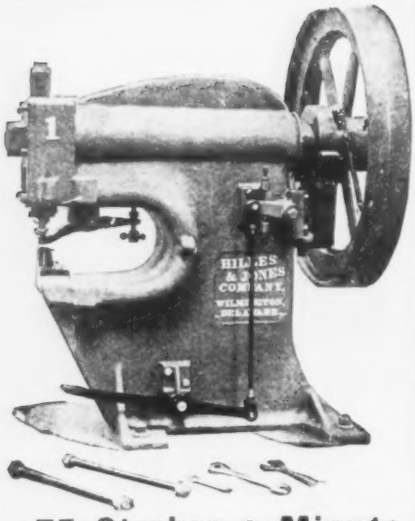

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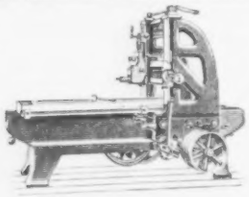

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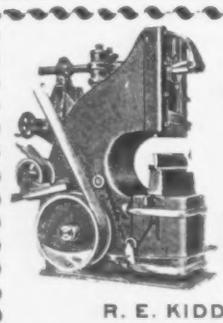

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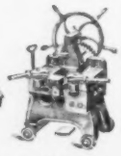

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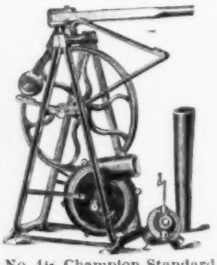

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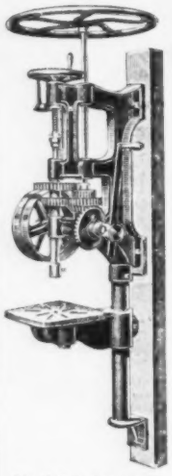

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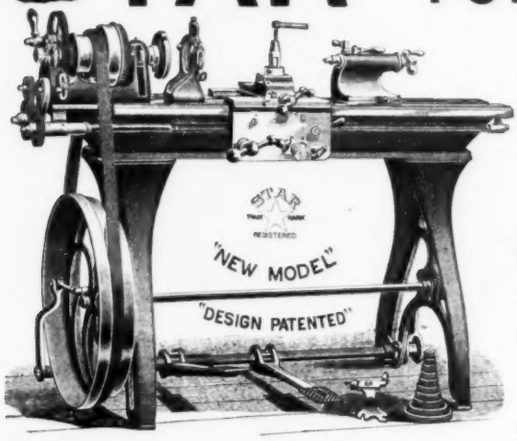

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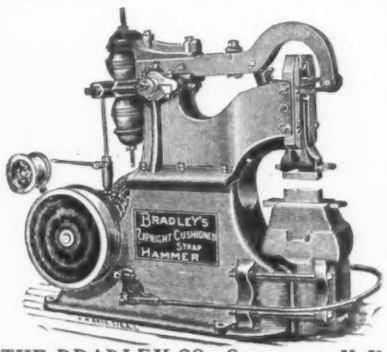

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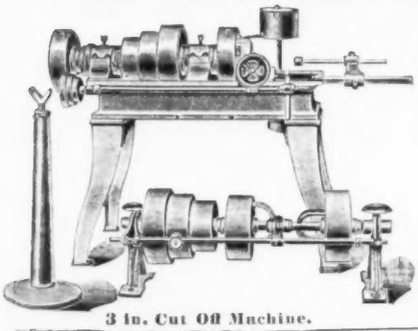

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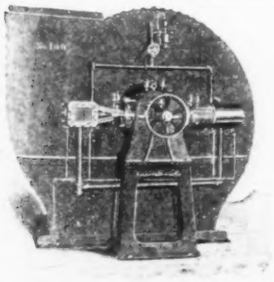

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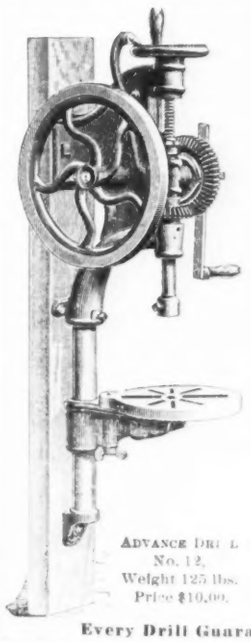

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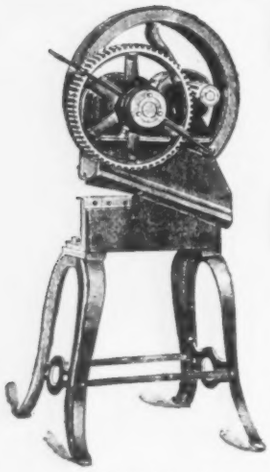

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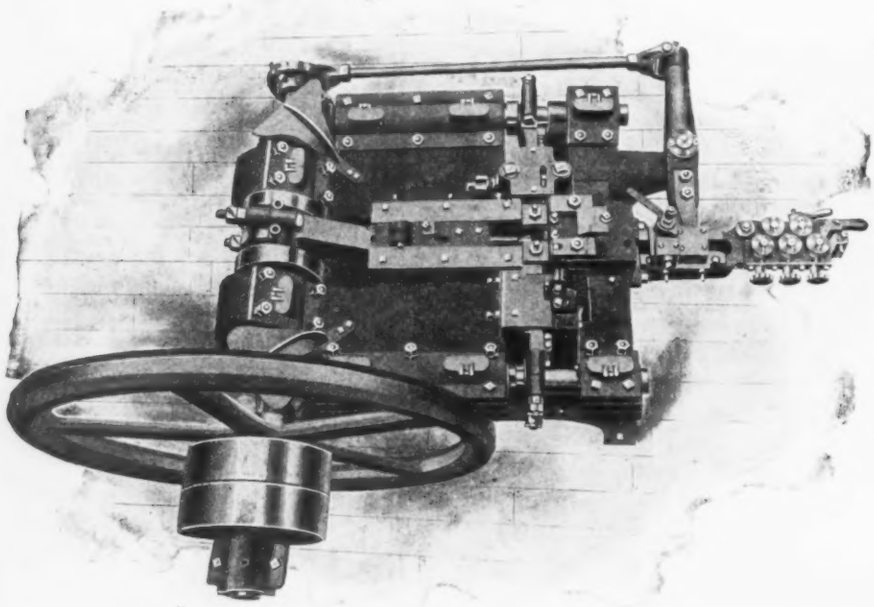

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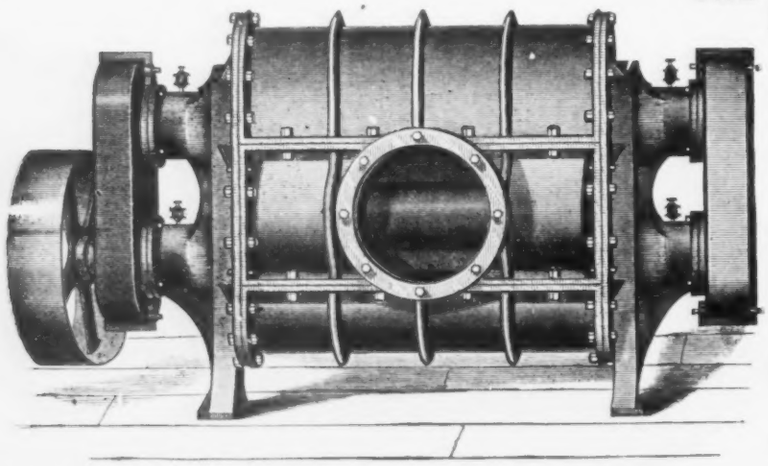

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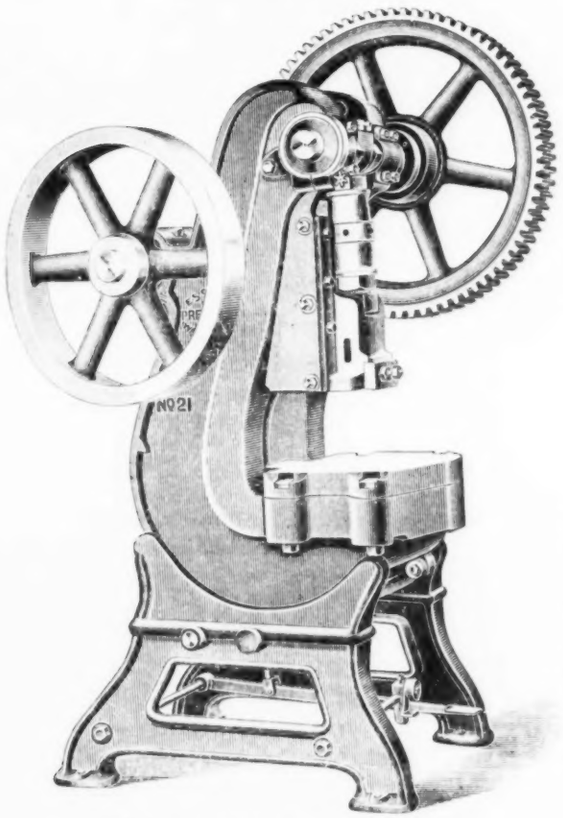

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ADJUSTABLE INCLINE PRESSES.

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The bed is planed accurately with the bottom of the slide. The legs are well designed, giving ample surface for rigidity, and are bolted to the frame by four screws, which being loosened, the frame can be readily inclined to 40 degrees, for the use of combination dies, permitting the work to fall away by gravity. The clutch is simple and very strong, all parts being made of tool-steel and hardened. The contact points are flat surfaces, instead of round, as in most clutches, giving longer life to the parts and making them less liable of "chipping" off. The clutch is instantaneous in its action and absolutely safe, as it is impossible to throw the clutch into action while setting dies even when the wheel is in motion. Each press is supplied with one solid bolster plate, four forged bolster bolts and necessary wrenches.

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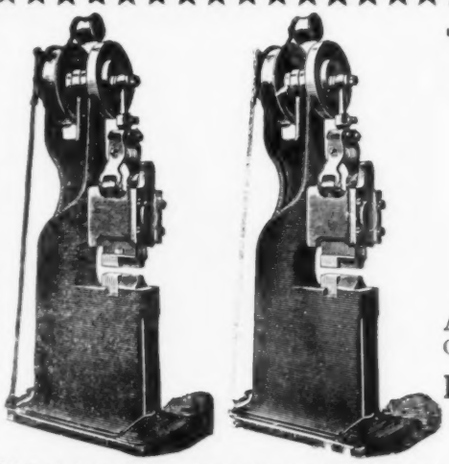


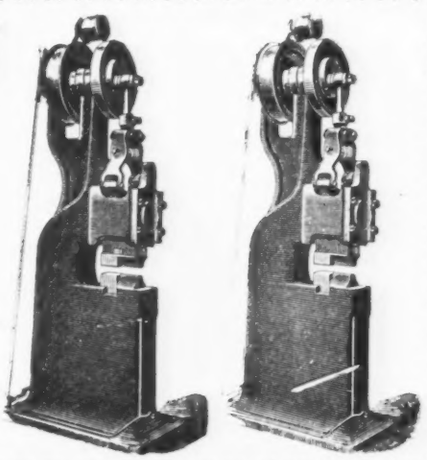
The DUPONT

Power Hammer

EXCELS.

WHY ?

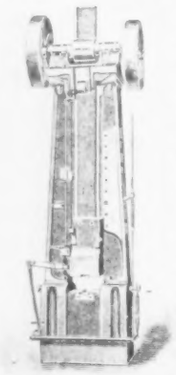
Ask us. Our catalogue tells. Our customers tell.



DUPONT MFG. CO.,

St. Johnsbury, Vt., U. S. A.

Drop Hammers.



Recently improved: metal of the most enduring qualities, intelligently distributed throughout; paper pulleys that give no trouble; hammers and die blocks of steel; joints and bolts cushioned with rawhide or leather; beds of each size made ten and fifteen times the weight of the hammer, weighing 400, 600, 800, 1,000, 1,200, 1,500, 2,000 and 2,400 pounds.

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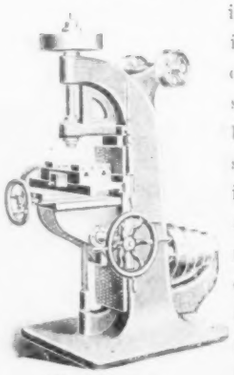

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in four sizes, having an abundance of metal and spindles driven by belt. Are very desirable appliances in drop forging shops, and are not made of higher quality or offered at more reasonable prices than by the undersigned.

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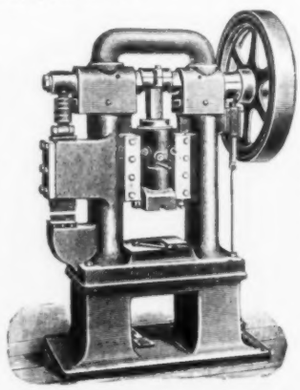
Made in two sizes, with and without sprue cut off.



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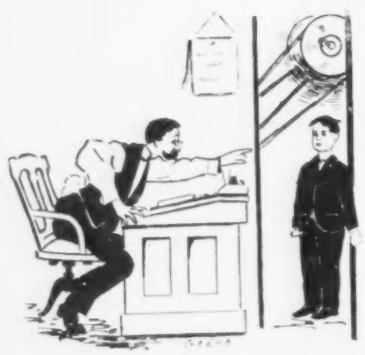

from your works are overcome in a measure in your office by closed doors and deadened walls; but do you realize that noise is a protest against wasted power? The more perfectly parts fit the less power required, with corresponding reduction of noise.

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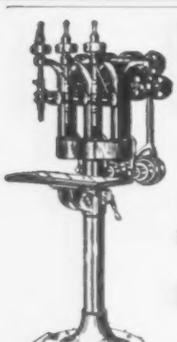

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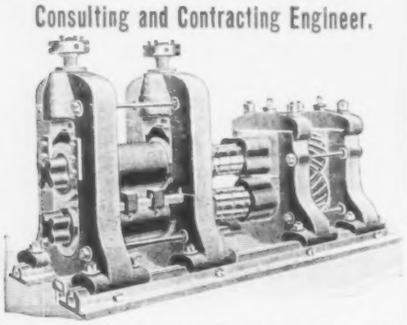

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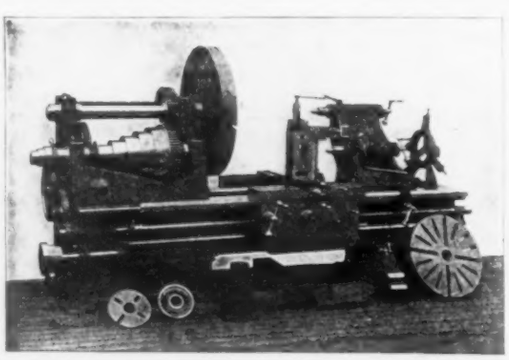

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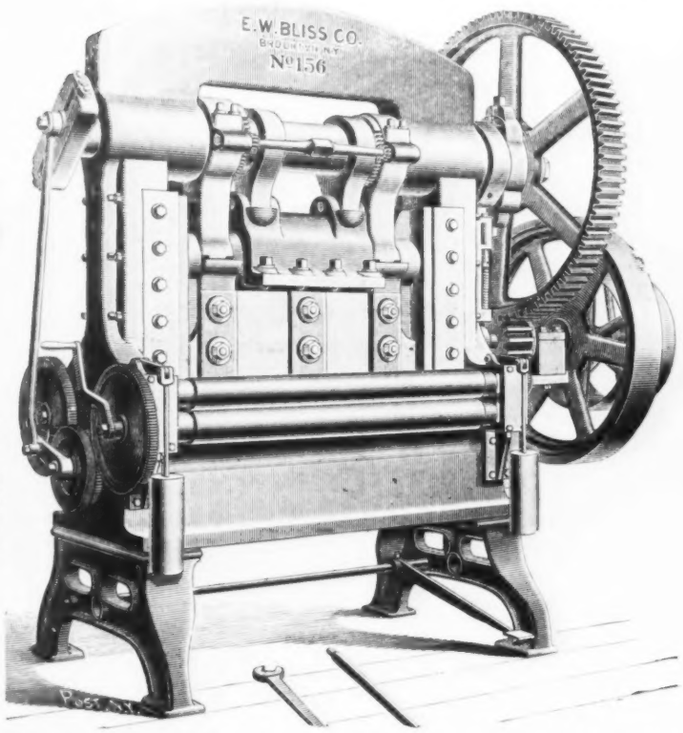

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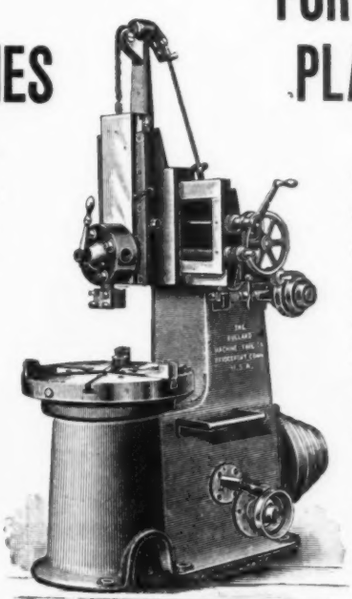

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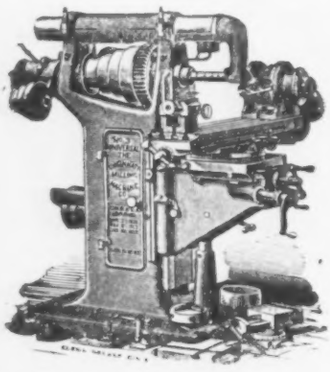

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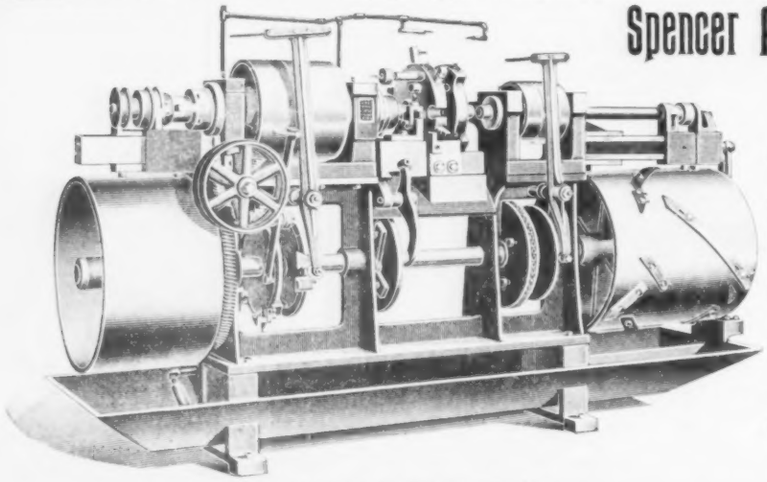

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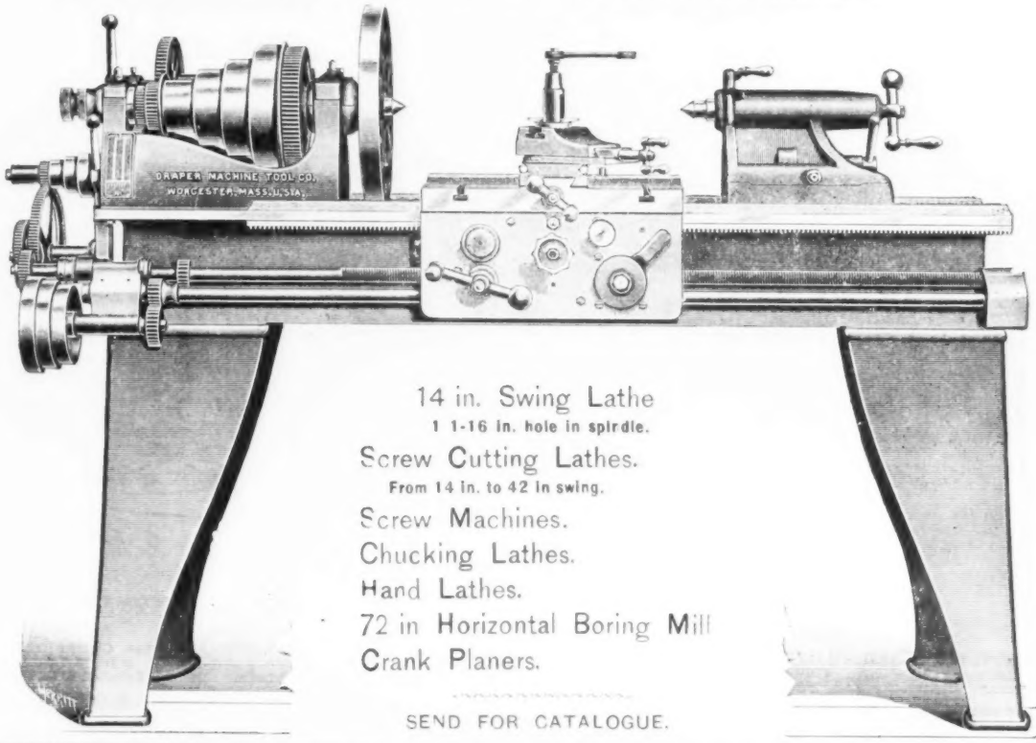

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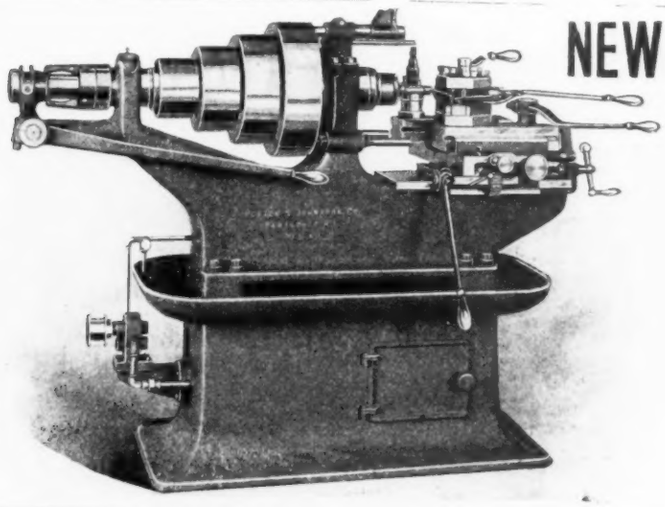

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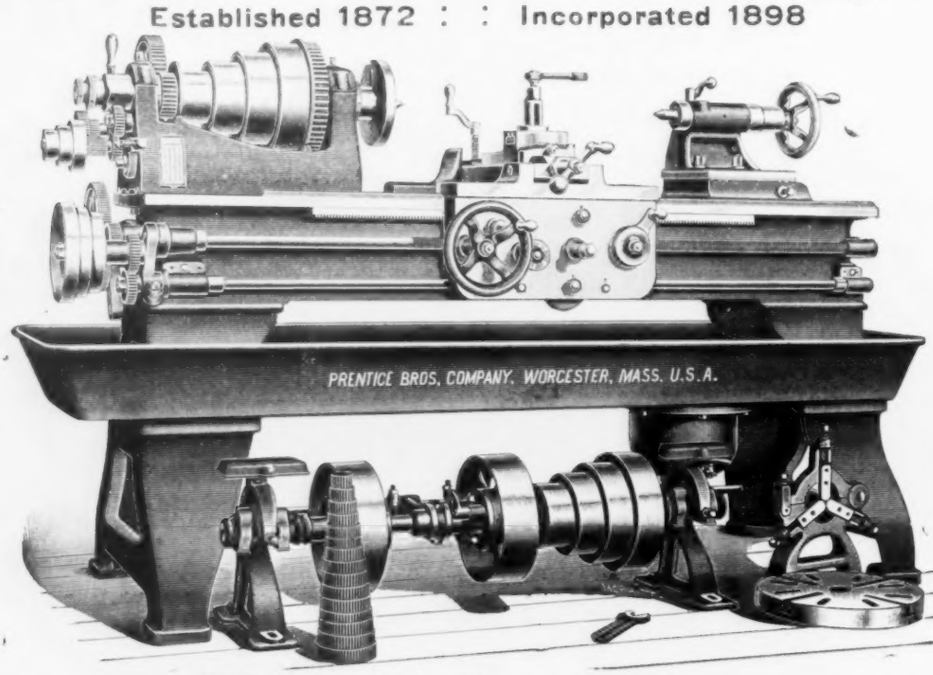

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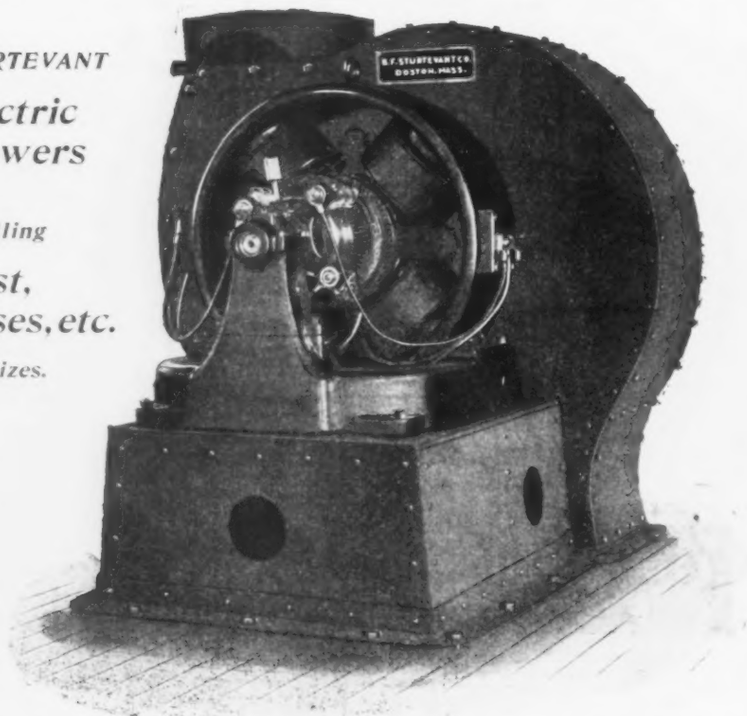

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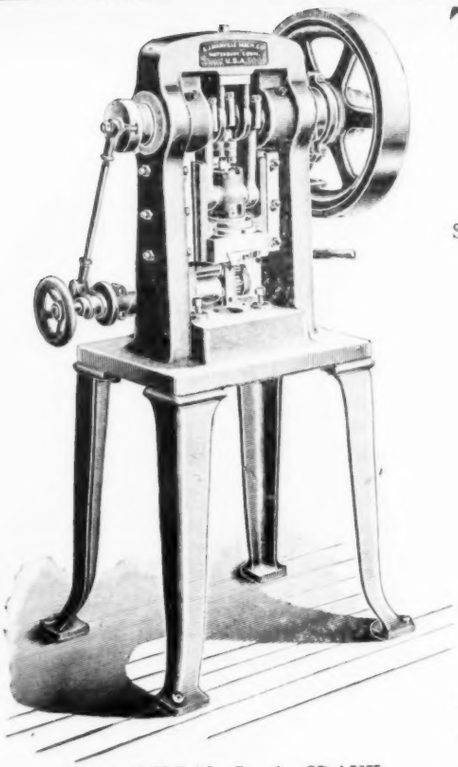

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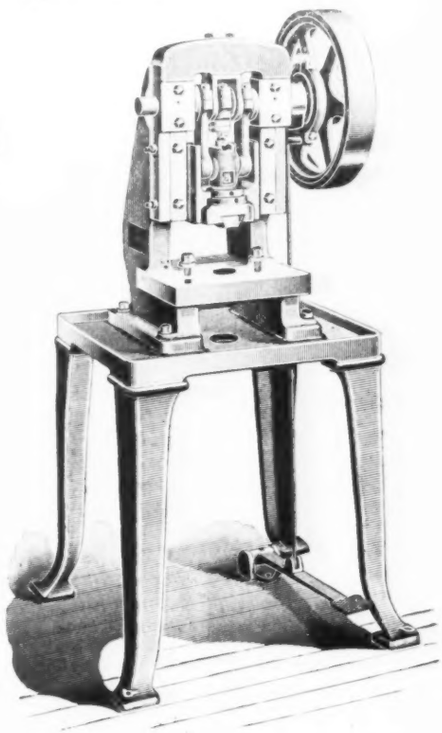

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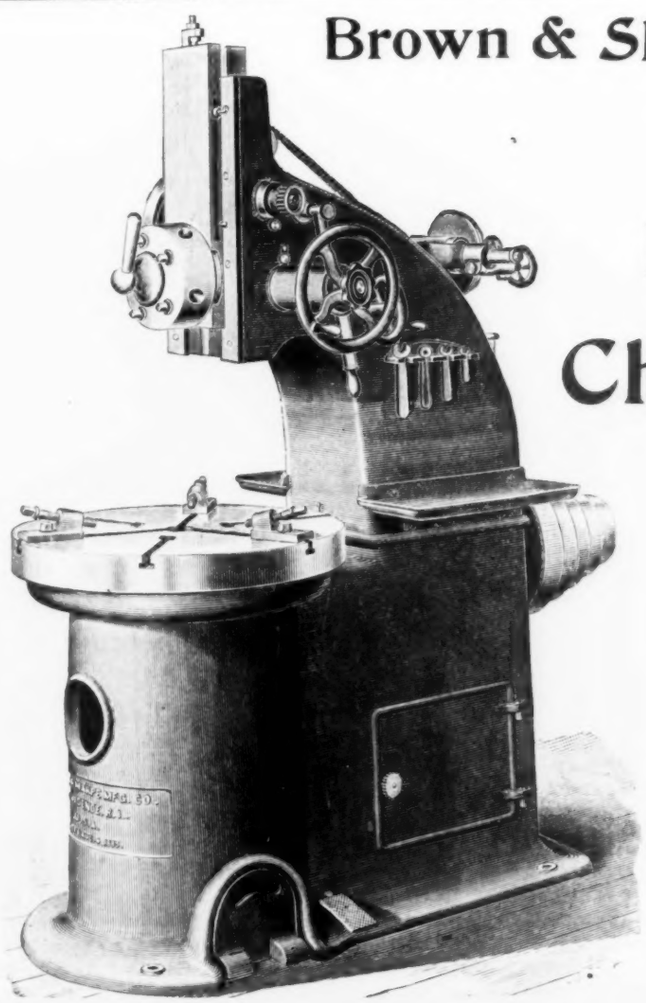

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28 in. B. G. P. F. A. S.
32 in. B. G. P. F. A. S.
40 in. B. G. P. F. A. S.
1 Henley Swing Drill.
14 in. Aurora Sensitive.
16 in. Sensitive, Flickinger.

MISCELLANEOUS.
16 in. x 6 ft. Fox Monitor.
24 in. Pulley Lathe.
24 in. Turret Lathe, 4500 pound.
26 in. Pulley Lathe.
Harrington Suspension Drill No. 1 for plate work.
1 Brass Valve Machine.
Emery Stands for two wheels 1 in. x 2 in.
Garvin Screw Slotter.
Hand Forge, Foos Mfg. Co., Scientific No. 3.
Sellers Twist Drill Grinder.
Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS
IN
MACHINE TOOLS.
Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe
22 in. x 12 ft. Flather Engine Lathe.
No. 0 Pratt & Whitney Screw Machine with wire feed.
1 Fitchburg 30 in. x 30 in. x 8 ft. Planer.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear
Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
1 3-head Slotter for locomotive frames; bed 36 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,

156 Oliver St., Boston, Mass.
12 South Canal St., Chicago, Ill.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
36 in. x 18 ft. Fifield.
27 in. x 10 ft. Davis & Egan
25 in. x 12 ft. S.C. Forsaith
24 in. x 16 ft. S.C. Forsaith
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
14 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Prasse.

17 in. x 17 in. x 4 ft. Putnam Planer.
Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
14 in. x 5 ft. Turret Lathe.
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & K.
No. 4½ B. G. Garvin Miller
1 140 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
15 in. Davis & Egan Shaper.
26 " " "
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
3 50 lb. Bradley Strap Hammers.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago.

Second-Hand Tools.

ENGINE LATHES
- 1 13 x 5 Plain Turret Lathe.
- 1 14 x 5 Putnam.
- 1 15 x 5 Bullard.
- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 18 x 10 Steptoe-McFarlan.
- 1 20 x 8 Pond.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.

DRILLS.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 15 in. Betts Traveling Head.

SCREW MACHS.
- 1 ⅛ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1¼ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton Keyseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting-off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ¾, 1¼, 1½ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
13, 14 and 15 in. Hand Lathes.
1¼ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. Co.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.

Second-hand Machinery.

ENGINE LATHES.
1 54 in. x 22 ft. Pond, triple back geared, blocks to make it swing 66 in.
1 30 in. x 23 ft. New Haven.
1 24 in. x 16 ft. H. C. Fish & Co., blocks to raise to 32 in.
1 36 in. x 50 in. x 12 ft. Gap Lathe, triple B. G.
7 20 in. x 8 ft. to 12 ft. Lathes, different makes.
11 18 in. x 8 ft to 12 ft Lathes, different makes.
6 16 in. x 6 ft. to 8 ft. Lathes, different makes.
29 14 in. x 6 ft Lathes, different makes and style of rests.

PLANERS.
1 36 in. x 36 in. x 9 Pond.
1 36 in. x 36 in. x 9 New Haven.
1 30 x 26 in. x 8 Putnam.
1 24 x 24 x 6 Whitcomb.
1 24 x 24 x 6 Pond.
1 22 x 22 x 5 Davis.

MILLING MACHS.
1 No. 4 Cincinnati univ.
1 No. 1 " "
1 No. 2 " plain.
1 No. 3 Brainard "
1 No. 3 Kempsmith "
1 No. 2 Garvin "
1 No. 13 Brown & Sharpe plain.
2 Ames Lincoln Pattern.
1 No. 3 P. & W. Lincoln Pattern.

SHAPERS.
1 26 in. Hendey.
2 15 in. "
1 20 in. Gould & Eberhardt
1 16 in. Steptoe.
1 14 in. Fitchburg.
1 14 in. Putnam, traveling head, two tables.

MISCELLANEOUS.
Screw Machines.
Turret Lathes.
Drill Presses.
Bolt Cutters.
Power Presses.
Bradley Hammers.
1 54 in. Bement Boring Mill.
1 12 in Bement Slotter

Also complete line of improved new machine tools.
Write us for anything you want.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine, 85 H P.		$225
One 9x18 " " "	25 H. P.	125
One 65 H. P Hor. Tubular Boiler, complete,		225
One 50 " Vertical "	"	200
One 40 " " "	"	200
One 12" Double Rocking Scrap Shear,	- -	125
6", 5", 4", Section Steam Pumps, each	-	100

SCHULTZ & CO., 14 So. Broad St., Philadelphia.

HEAVY TOOLS.
For Quick Delivery—Good as New.
Column Lathe, 54 in. x 30 ft., solid Cast Base, 2 Heads. Splendid Tool.
4-Spindle Drill Press, Movable Spindles and Table. Quick and Accurate. Heavy Tool. Finest Condition. H. E. PERRY, 3923 Union Av., Chicago

Two Fine Lathes.

One 72-in. swing x 24 ft. bed, triple geared, screw feed, with quick return. Very heavy and in excellent order.

One 17 in. swing x 8 ft. bed, built by I. H. Johnson & Co., and nearly new; back geared, compound rest, modern pattern. Fine order.

Also a 2½ in Merriman Bolt Cutter, 36 in. Column Drill, 1½ in. Gould Bolt Cutter.

All bargains.

THOMAS P. CONARD,
Forrest Building, PHILADELPHIA.

FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
24 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " "
10 Friable Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 3 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
12-18¾ x 10¾ x 10 Compound Worthington Pump.
10-16 x 10¼ x 10 " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
12 B'way, N. Y. City.

FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & B. Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen't'g Set.

WICKES BROS., Saginaw, Mich.

FOR SALE.

1 24 in. x 24 in. x 6 ft. Planer, Hilles & Jones.
1 36 in. x 24 in. x 6 ft. "
1 12 in. x 10 ft. Engine Lathe. " "
1 21 in. x 10 ft. " " Fifield.
2 14 in. x 6 ft. " " Blaisdell.
1 18 in. x 9 ft. " " Lathe & Morse.
1 16 in. x 8 ft. " " Pratt & Whitney taper.
1 24 in. Crank Shaper, Gould & E.
1 42 in. Radial Drill, Hilles & Jones
1 8 in. x 12 in. Automatic Engine.
1 No. 8 Sturtevant Pressure Blower.
1 No. 4 Root Blower.
1 Ferracute Foot Press.
1 Roper Oil Separator.

Warehouse, 20-22 Frankfort St.

READE & BOWLER,
216-217 Amer Trus Bdg., Cleveland, O.

CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 in. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.
1 13 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

S. T. LUND,
54 Oliver St., Boston, Mass.

FOR SALE.

(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS,
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.
13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines
No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 40 ft., 8 heads.

Shapers.
9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.
24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,
136-138 Liberty St., New York City.

66-INCH PLANER

Delivery April 1st; planes 66 in. wide, 52 in. high; can be made any length of bed; two heads on cross rail; one or two side heads, as desired. Weight on 14 ft. bed 30,000 lbs. Send for full description and price.

36 in. Planers for delivery in thirty days.

84 in. x 84 in x 18 ft. Second-hand Planer, weight, 35,000 lbs. Send for photograph and full description.

Send for list of second-hand Planers.

Marshall & Huschart Machinery Co.,
62-64 S. Canal St., Chicago, Ill.
19 S. Water St., Cleveland, O.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ½, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horisontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $350 each. Numerous machines not mentioned for want of space.
C. R. BIGELOW, 45 Dey St., New York City

ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in. tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg. Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place,
Philadelphia, Pa.

Second-hand Machinery,

IN GOOD ORDER FOR IMMEDIATE DELIVERY.

ENGINE LATHES.
12 in. x 5 ft. Reed.
13 in. x 6 ft. Ames
14 in. x 6 ft. Blaisdell.
16 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
16 in. x 8 ft. Springfield.
16 in. x 12 ft. Bridgeport.
18 in. x 8 ft. Lodge-Davis.
20 in. x 10 ft. Putnam.
22 in. x 17 ft. Harrington.
24 in. x 12 ft. Putnam.
28 in. x 12 ft. Fay-Scott.
30 in. x 10 ft. Pond Tool Co.
32 in. x 18 ft. Waterman.
36 in. x 16 ft. Fitchburg.
40 in. x 22 ft. Fifield.
50 in. x 14 ft. Fifield.
52 in. x 22 ft. Wood Light Ex. heavy, triple geared

SHAPERS.
10 in. crank, New Haven.
12 in. " Gould-Eber.
12 in. " Prentiss.
15 in. friction, Prentiss.
15 in. crank, Smith Mills.
15 in. crank, Gould-Eber.
24 in. crank, Gould-Eber.

SCREW MACHINES Wire Feed
29-32 in. Bardons & Oliver.
1 5-32 in. " "
1 9-16 in. " "
1 15-16 in. Garvin, No. 3, Fric. head, Tur. feed.
2 in. Davis-Egan, complete
2½ in. Jones-Lamson, No. 3.

MILLING MACHS.
No. 1 Univ., Brown & Sharpe, with atts.
No. 8 Hand, Garvin.
No. 12 Auto., Garvin.

Bridgeport Standard Pattern, auto. feed, weight 3000.
Lincoln pattern, Garvin.

PLANERS.
16 in. x 3 ft. Pratt Whitney.
24 in. x 6 ft. Pond.
24 in. x 6 ft. Gray Co.
24 in. x 6 ft. Pease.
24 in. x 6 ft. N.Y.S.Eng.Co
26 in. x 9 ft. Ferris-Miles.
30 in. x 6 ft. D. W. Pond.
30 in. x 8 ft. Rochester.
34 in. x 8 ft. Wheeler.
34 in. x 12 ft. Sellers.
38 in. x 10 ft. Pond.
38 in. x 8 ft. Pease.
40 in. x 12 ft. Fitchburg.
48 in. x 8 ft. Pond Tool Co.

UPRIGHT DRILLS.
20 in. Prentice, plain.
20 in. Blaisdell, Bk. gears.
25 in. Barnes, complete.
28 in. New Haven, "
30 in. Prentice. "
3 Spin. Slates, Latest.

RADIAL DRILLS.
72 in. swing, Standard.
88 in. swing, Semi-univ.
108 in. swing, Niles

MISCELLANEOUS.
Universal Grinder, 16 in. swing, Brown & Sharpe.
Slates Tool Grinder.
Centering Mch., Whiton's.
Medart Shaft Straightener
Morton ¾ in. Keyseater.
Gould 36 in. Gear Cutter.
Profiler, 2 spindles, Ames.

BOILER TOOLS.
Power Rolls, 14 ft., latest.
Plate Planer, Sellers.
Punches, various sizes.
Double Punch and Shear

Large Stock NEW STANDARD TOOLS.

J. J. McCabe,

14 Dey St., New York.

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14 in., 16 in. and 22 in. Corliss Engines.

16 in., 20 in. Buckeye Automatic Engines.

100, 250 and 350 H. P. Westinghouse Compound Engines.

50 to 200 H. P. Slide Valve Engines.

14 in., 16 in., 18 in., 20 in., 24 in. and 36 in. Screw Cutting Lathes.

16 in., 20 in., 24 in., 36 in., 54 in. and 60 in. Planers.

36 in., 50 in. and 60 in. Radial Drills.

Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

FRANK TOOMEY,
Nos. 129 and 131 N. Third St., Phila., Pa.

BOILERS.

3 125 H. P. Loco. Style, 100 lbs. steam pressure.
2 100 H. P. Loco. Style (Wooten fire boxes).
7 80 to 100 H. P. Loco. Style, 100 lbs. steam.
1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished

POULTERER & CO.,
410 Bullitt Bldg., Phila., Pa.

FOR SALE.

26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in. built by C. H. Brown & Co., Fitchburg, Mass. FRANK McSWEGAN & SONS,
Dover St. and Franklin Square, N. Y.

For Sale.

One 16 in. x 32 in. "Fishkill" Horizontal Corliss Engine, practically new.

One 200 lb. "Bradley" Helve Hammer.

One 60 in. x 60 in. x 12 ft Planer.

One 6½ x 10 in. Double Cylinder, Double Drum "Crook" Hoisting Engine with boiler attached.

The above are second hand but in first class condition.

L. F. SEYFERT'S SONS,
437-441 N. 3d St., Philadelphia, Pa.

Second-hand Machinery,

IN FINE CONDITION.

60 in. New Haven Pulley Lathe with face plate jaws.
30 x 12 H. C. Fish Lathe, compound rest, taper attach. and chuck.
21 x 9 Lodge-Davis Lathe, comp'd rest, taper attach.
18 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
16 x 8 Prentice Bros., comp'd rest, taper attach. and chuck.
21 x 24 ft. Perkins Plain Rest and Chuck
20 x 8 Putnam compound rest and chuck.
14 x 6 Prentice Elevating Rest and Chuck.
40 in. New Haven Drill, Back Geared, Power Feed.
34 in. Barnes " " " " "
25 in. Prentice " " " " "
30 x 30 x 6 ft. Pond Mch. Tool Co. Planer.
28 x 24 x 5 ft. New Haven Planer.
20 x 16 x 3 ft. " " "
17 in. Juengst Shaper.

S. M. YORK CO.,
Cleveland, Ohio.

FOR SALE.

SHAPERS.

16 in. to 32 in. stroke.

J. STEPTOE & CO.,
CINCINNATI, O.

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48 in. x 33 in. x 8 ft. Single Head Planer.
24 in. x 15 ft. Fitchburg Lathe.
1 1-16 in. Brown & Sharpe Wire Feed Screw Machine.
⅝ in Spencer Coil Wire Automatic Screw Machine.
84 in. Gear Cutter not automatic.
No. 2 Hilles & Jones Double End Punch and Shear, 16,000 lbs.
Send for complete list just out.

HENRY F. HILL,
123 Oliver Street, Boston, Mass.

SECOND-HAND MACHINERY.

1 Planer 72 in. x 36 in. x 9 ft., two heads.
1 Planer 60 in. x 60 in. x 14 ft. screw feed, cheap.
1 Planer 16 in. x 16 in. x 3 ft. Gould Planer.
1 Iron Planer 36 in. x 36 in. x 14 ft.
1 26 x 24 x 5 ft. Pond Planer.
1 Iron Planer, 22 x 22 x 5 ft., Hendey make.
1 Engine Lathe, 42 in. x 14 ft.
1 Engine Lathe, 32 in. x 14 ft., with chuck.
1 Heavy Pit Lathe, to swing 10 ft.
1 1000 lb. Steam Hammer.
1 2000 lb. Miles Steam Hammer.
1 400 lb. Morgan Steam Hammer.
1 250 lb. Morgan Steam Hammer.
1 48 in. Horizontal Boring Mill, Pond make.
1 Clayton Air Compressor, 16 in. x 16 in. x 14 in. stroke.
1 250 lb., 1 200 lb. Farrell Drop.

Machinery appraised any part of country.

NEW YORK MACHINERY DEPOT,
Office 178 Broadway N. Y.

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250 MACHINE TOOLS,

All first class, comprising the entire plant of the Warwick Cycle Mfg. Co., Springfield, Mass. Will be sold in lots to suit.

A. B. PITKIN MACHINERY CO.,
PROVIDENCE, R. I.

I have 100 Horse Power Locomotive Boiler, good for 125 lbs. pressure, nearly new, extra large fire box; Round and Square Iron Tanks, all sizes; Boiler Shells for stacks and culverts; Pumps, Upright and Horizontal Boilers Engines, Blow-off Tanks. All kinds of Scrap Iron and Metals bought.

ROBERT M. CUNLIFFE,
1140-42 Washington Ave., Philadelphia, Pa.

FOR SALE CHEAP.

One second-hand Punching Machine. Capacity 1⅛ hole in 1 in. plate. Address
"PUNCHING,"
office of *The Iron Age*, 232-238 William St., N. Y.

MOVING.

Rather than move the following new and second-hand machines into our new shop, we will make SPECIAL PRICES on them. Write us!

LATHES.
12 in. x 5 ft. Bement.
12 in. x 6 ft. Silk.
16 in. x 7 ft. Harrington.
21⅛ in. x 11 ft. Thayer & Houghton
25 in. x 8 ft. Putnam, not s.c.
26 in. T. C. Lathe, 3⅛ in. hole in spindle. Tool front and back.
27 in. x 27 ft. L. & D., Taper.

SHAPER.
No. 2 Fitchburg, Traveling Head.

PLANERS.
24 in. x 24 in. x 6 ft. Whitcomb.
24 in. x 24 in. x 8 ft. Smith-Silk.
26 in. x 26 in. x 8 ft. Putnam.

DRILLS.
20 in. Wheel & Lever Drill.
20 in. Wheel & Lever, B. G.
24 in. B. G. P. F. A. S.
28 in. B. G. P. F. A. S.
32 in. B. G. P. F. A. S.
40 in. B. G. P. F. A. S.
1 Henley Swing Drill.
14 in. Aurora Sensitive.
16 in. Sensitive, Flickinger.

MISCELLANEOUS.
16 in. x 6 ft. Fox Monitor.
24 in. Pulley Lathe.
24 in. Turret Lathe, 4500 pound.
26 in. Pulley Lathe.
Harrington Suspension Drill No. 1 for plate work.
1 Brass Valve Machine.
Emery Stands for two wheels 1 in. x 2 in.
Garvin Screw Slotter.
Hand Forge, Foos Mfg. Co., Scientific No. 3.
Sellers Twist Drill Grinder.
Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS IN MACHINE TOOLS. Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe
22 in. x 12 ft. Flather Engine Lathe.
No. 0 Pratt & Whitney Screw Machine with wire feed.
1 Fitchburg 30 in. x 30 in. x 8 ft. Planer.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer.
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear
Medart Power Shaft Straightening Machine up to 4⅛ in. shafts.
1 3-head Slotter for locomotive frames; bed 35 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,

156 Oliver St., Boston, Mass.
12 South Canal St., Chicago, Ill.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
36 in. x 18 ft. Fifield.
27 in. x 10 ft. Davis & Egan
25 in. x 14 ft. S.C. Forsaith
24 in. x 10 ft. S.C. Forsaith
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
16 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.

17 in. x 17 in. x 4 ft. Putnam Planer.
Hand Miller, Garvin.

Lincoln Miller, Pratt & W.
14 in. x 5 ft. Turret Lathe.
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & K.
No. 4½ B. G. Garvin Miller
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
15 in. Davis & Egan Shaper.
26 " " " "
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
3 50 lb. Bradley Strap Hammers.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago.

Second-Hand Tools.

ENGINE LATHES
- 1 13 x 5 Plain Turret Lathe.
- 1 14 x 5 Putnam.
- 1 15 x 5 Bullard.
- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 18 x 10 Steptoe-McFarlan.
- 1 20 x 8 Pond.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.

DRILLS.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 15 in. Betts Traveling Head.

SCREW MACHS.
- 1 ⅛ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1¼ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton Keyseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting-off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ⅞, 1⅛, 1¼ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in. Hand Lathes.
1¼ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. CO.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.

Second-hand Machinery.

ENGINE LATHES.
1 54 in. x 22 ft. Pond, triple back geared, blocks to make it swing 66 in.
1 30 in. x 23 ft. New Haven.
1 24 in. x 16 ft. H. C. Fish & Co., blocks to raise to 32 in.
1 36 in. x 50 in. x 12 ft. Gap Lathe, triple B. G.
7 20 in. x 8 ft. to 12 ft. Lathes, different makes.
11 18 in. x 8 ft to 12 ft Lathes, different makes.
6 16 in. x 6 ft. to 8 ft. Lathes, different makes.
2 14 in. x 6 ft Lathes, different makes and style of rests.

PLANERS.
1 36 in. x 36 in. x 9 Pond.
1 36 in. x 36 in. x 9 New Haven.
1 30 x 26 in. x 8 Putnam.
1 24 x 24 x 6 Whitcomb.
1 24 x 24 x 6 Pond.
1 22 x 22 x 5 Davis.

MILLING MACHS.
1 No. 4 Cincinnati univ.
1 No. 1 " "
1 No. 2 " plain.
1 No. 3 Brainard "
1 No. 3 Kempsmith "
1 No. 2 Garvin "
1 No. 13 Brown & Sharpe plain.
2 Ames Lincoln Pattern.
1 No. 3 P. & W. Lincoln Pattern.

SHAPERS.
1 26 in. Hendey.
2 15 in. "
1 20 in. Gould & Eberhardt
1 16 in. Steptoe.
1 14 in. Fitchburg.
1 14 in. Putnam, traveling head, two tables.

MISCELLANEOUS.
Screw Machines.
Turret Lathes.
Drill Presses.
Bolt Cutters.
Power Presses.
Bradley Hammers.
1 54 in. Bement Boring Mill.
1 12 in Bement Slotter

Also complete line of improved new machine tools.
Write us for anything you want.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine,	85 H. P.	$225
One 9x18 " " "	25 H. P.	125
One 65 H. P. Hor. Tubular Boiler, complete,		225
One 50 " Vertical " " "		200
One 40 " " " " "		200
One 12" Double Rocking Scrap Shear, - -		125
6", 5", 4", Section Steam Pumps, each -		100

SCHULTZ & CO., 14 So. Broad St., Philadelphia.

HEAVY TOOLS.
For Quick Delivery—Good as New.
Column Lathe, 54 in. x 30 ft., solid Cast Base, 2 Heads. Splendid Tool.
4-Spindle Drill Press, Movable Spindles and Table. Quick and Accurate. Heavy Tool. Finest Condition. H. E. PERRY, 3923 Union Av., Chicago

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Two Fine Lathes.

One 72-in. swing x 24 ft. bed, triple geared, screw feed, with quick return. Very heavy and in excellent order.

One 17 in. swing x 8 ft. bed, built by I. H. Johnson & Co., and nearly new; back geared, compound rest, modern pattern. Fine order.

Also a 2½ in Merriman Bolt Cutter, 36 in. Column Drill, 1½ in. Gould Bolt Cutter.

All bargains.

THOMAS P. CONARD,
Forrest Building, PHILADELPHIA.

FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
24 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " " " "
10 Frisbie Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 3 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
12-18½ x 10¾ x 10 Compound Worthington Pump.
10-16 x 10¾ x 10 " " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
12 B'way, N. Y. City.

FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & B. Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 18 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen't'g Set.

WICKES BROS., Saginaw, Mich.

FOR SALE.

1 24 in x 24 in. x 6 ft. Planer, Hilles & Jones.
1 36 in. x 24 in. x 6 ft. "
1 12 in. x 10 ft. Engine Lathe. " "
1 21 in. x 10 ft. " " Fifield.
2 14 in. x 6 ft. " " Blaisdell.
1 18 in. x 9 ft. " " Lathe & Morse.
1 16 in. x 8 ft. " " Pratt & Whitney taper.
1 24 in. Crank Shaper, Gould & E.
1 42 in. Radial Drill, Hilles & Jones
1 8 in. x 12 in. Automatic Engine.
1 No. 8 Sturtevant Pressure Blower.
1 No. 4 Root Blower.
1 Ferracute Foot Press.
1 Roper Oil Separator.

Warehouse, 20-22 Frankfort St.

READE & BOWLER,
216-217 Amer. Trus. Bdg., Cleveland, O.

CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 in. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

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150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.
4 13 in. x 4 ft. A. T. & M. Co. plain Turret Lathes, with cut off rests, condition excellent and can be bought very low. Please address

S. T. LUND,
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FOR SALE.

(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS,
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.
13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines
No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 40 ft., 3 heads.

Shapers.
9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.
24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,
136-138 Liberty St., New York City.

66-INCH PLANER

Delivery April 1st; planes 66 in. wide, 52 in. high; can be made any length of bed; two heads on cross rail; one or two side heads, as desired. Weight on 14 ft. bed 30,000 lbs. Send for full description and price.

36 in. Planers for delivery in thirty days.

84 in. x 84 in x 18 ft. Second-hand Planer, weight, 35,000 lbs. Send for photograph and full description.

Send for list of second-hand Planers.

Marshall & Huschart Machinery Co.,
62-64 S. Canal St., Chicago, Ill.
19 S. Water St., Cleveland, O.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ½, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $350 each. Numerous machines not mentioned for want of space.

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ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in. tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine
1 500 Light Multi-Polar Dynamo, 550 revolutions

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg. Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
202 Walnut Place,
Philadelphia, Pa.

Second-Hand Machinery.

LATHES.

84 x 20 Cleveland.
70 x 16 driving wheel.
53 x 20 Gav & Silver.
38-50 x 15 Gage.
30-38 x 24 N. Y. Steam Eng. Co.
30 & 38 Putnam pulley.
30 x 22 ft. 6 New Haven.
26 x 12 New Haven.
25 x 10 Smith.
20 x 8 Lathe & Morse.
20-37 x 14 Gap.
19 x 8 Pond.
18 x 21 Plain turning.
18 x 14 P. & W.
18 x 6 Eddy.
17 x 8 Putnam.
17 x 8 P. & W.
16 x 8 Prentiss.
16 x 6 Bullard.
15 x 6 Blaisdell.
15 x 6 Sebastian May.
14 x 6 Putnam.
13 x 6 Ames.
12 x 5 Sellers.
10 x 4 Reed.

PLANERS.

42 in. gear planer.
16 ft. Hilles & Jones plate.
60 x 60 x 16 Waterbury.
36 x 36 x 10 Putnam.
36 x 32 x 10 New Haven.
27 x 27 x 6 Wood & Light.
26 x 26 x 6 Putnam.
25 x 25 x 6 Sellers.
24 x 24 x 8 P. & W.
24 x 24 x 7 Harrington.
24 x 24 x 6 L. W. Pond.
24 x 24 x 4 Hewes & Phillips.
20 x 20 x 5 Newton.
18 x 18 x 4 G. & E.

SCREW MACHS.

No. 3 Windsor, fric. hd. & W. F.
No. 3 B. & S. W. F. & P. F.
No. 2 P. & W., W. F.
No. 3 P. & W. drawing attachment.
No. 2 Prentiss, plain.
No. 1 Prentiss, W. F.
No. 1 Garvin, W. F.
No. 0 and No. 1 P. & W., W. F.
No. 1 and No. 2 P. & W., plain.
6 No. 0 Hartford, auto.

MISCELLANEOUS.

50 in. Bickford boring mill.
4-spindle Colts Gun stock profiler.
4 H. P. Pacific gas engine.
7 H. P. Otto gas engine.
7 No. 2 Higley cold saws.
Lee & Hunt cold saw with engine.
42 in. squaring shear.
10 in Putnam slotter.
6 in. Bement slotter.
8 ft. Betts bending rolls.
Set hand bending rolls.
¼ in. Adt riveter.
P. & W. screw slotter.
Garvin screw slotter.
No. 1 Stiles press.
No. 3 Stiles press.
No. 4 Waterbury press.
2 No. 18 Bliss presses.
No. 19 Bliss press.
16 in. Betts traveling hd. shaper.
14 in. Betts traveling hd. shaper.
12 in. Warren traveling hd. shaper.
15 in. Hendey fric. shaper.
10 in. Fitchburg crank shaper.
10 in. Gould crank shaper.
No. 3 Cincinnati univ. miller.
No. 1 B. & S. univ. miller.
No. 7 and No. 8 Brainard, plain.
No. 1½ Garvin power miller.

We have named above only a few of our tools. We have a large assorted stock, and it will pay you to write us whenever you need anything. Send for complete new and second-hand lists.

PRENTISS TOOL & SUPPLY CO.,
115 Liberty Street, New York.
Branch Office: Buffalo, N. Y.

BARGAINS.

16 in. x 16 in. x 3 ft. Planer, Pratt & Whitney.
24 in x 24 in. x 6 ft. Planer, Aldrich.
36 in. x 36 in. x 8 ft. Planer, New Haven.
12 in. x 5 ft. Engine Lathe, Young.
17 in. x 8 ft. " " Wright & Smith.
20 in. x 12 ft. " " L. W. Pond.
24 in. x 21 ft. " " New Haven.
54 in. x 11 ft. " "
84 in. Radial B.G.&S F'd, Betts Mch.Co.
36 in. x 6 ft. Turret Ch'k'g Lathe, Bullard.
Pond Index Miller.
No. 2 3-spindle Gang Drill, Garvin.
No. 2 Wire Feed Screw Machine. Takes 1" Stock. Good as new. Costilo.
No. 1½ Parker Press. Good order.

Can give bargains in new and second-hand machine tools at all times.

GEO. E. AFFLECK,
109 Liberty St., New York.

FOR SALE!!

SECOND-HAND

MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

HILL, CLARKE & CO.,
156 Oliver St., Boston.

WILL BUY

About 15 to 20 Tack Machines, if at right price.

State size and make and how long they have been running. Address

"TACK,"
Care *The Iron Age*, New York.

SECOND-HAND

Metal-Working Machinery

At Bargain Prices.

Lathes.

One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 26 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
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Branches at Chicago and Pittsburg.

For Sale.

Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
Florence, Mass.

ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

FOR SALE.

One Blooming Mill with 28 x 42 in. reversing engines, gearing, tables, table engines and hydraulic cranes.
31 x 108 in Plate Mill, Roughing Rolls, 28 x 84 in., live tables.
1 110 in. Plate Shear.
Pair 36 x 40 in. Horizontal Reversing Engines.
1 18 in. Bar Mill.
2 10 in. 3-high Bar Mills.
Engines, Shears, Roll Lathes, 20 Boilers.
Blowers.
One 10 ton Locomotive Crane.
One 2 ton Locomotive Crane. Both standard gauge.
Supply and Hydraulic Pumps.
Large lot of other machinery such as used in a large steel works

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh, Pa.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

2 Alligator Shears.
1 Rotary Shears.

Machinery of all kinds.

Tanks all sizes for sale or exchange for scrap iron.

WM ECKBOLDS' SONS,
711 E. Girard Ave., Philadelphia.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

Providence Steam Engine Company,

PROVIDENCE, R. I.

SECOND-HAND ENGINES FOR SALE.

One 12 x 36 Wheelock Engine, right hand, wheel 9 ft. diameter, 17 in. face, solid, 44 horse power.

One 23 x 60 George H. Corliss Engine, right hand, wheel 20 ft. diameter, 38 in. face, 272 horse power, 60 revolutions, $1100.

One pair 30 x 60 George H. Corliss Engines, wheel 28 ft. diameter, 90¾ in. face, 463 horse power, (per engine) $3250.

One 9 x 18 Exeter Engine, right hand, wheel 7 ft. diameter, 12 in. face, 35 horse power, 100 revolutions, $550.

One 18 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 25 in. face, 175 horse power, 80 revolutions, $770.

One 20 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 26 in. face, 219 horse power, 80 revolutions, $1650.

One 12 x 36 Babcock & Wilcox Engine, left hand, wheel 10 ft. diameter, 24 in. face, 52 horse power, 70 revolutions, $330.

One 10 x 24 Rider Engine, right hand, wheel 7 ft. diameter, 14 in. face, 31 horse power, 92 revolutions, $110.

One 14 x 48 George H. Corliss Engine, right hand, 16 ft. wheel, 20 in. face, 100 horse power, 75 revolutions, $275.

The horse powers are all figured on 80 lbs steam, ¼ cut-off. Deliveries are f.o.b. Providence.

Second-hand Tools.

U. Baird Machinery Co.

323-325 Water St., 392-394 First Ave.,

PITTSBURGH, PA., U. S. A.

3 in. x 48 in. Hand Bending Rolls.
No. 0 Stiles & Parker Fowler Press.
No. 1 " " " "
36 in. Gould & Eberhardt Spur Gear Cutter.
No. 1 Newton Plain Milling Machine.
No. 11 Brown & Sharpe Milling Machine.
48 in. Pulley Borer.
19 in. Putnam Slotter.
100 lb. Merrill Bros. Air Cushioned Hammer.
80 lb. " " " " "
24 in. Hendey Shaper.
No. 10 Sturtevant Pressure Blower.
No. 8 " Monogram Blower.
48 in. Box Radial Drill.
24 x 24 x 5 ft. Planer.
2 in. Acme Bolt Cutter.
18 in. Blaisdell Drill Press.
400 lb. Steam Hammer.
9 in. Star Foot Lathe.
Engine and Turret Lathes.

FOR SALE.

An old established Hardware Business, the best stand in New England. For particulars inquire of

BALDWIN, ROBBINS & CO.,
115 Milk St., Boston, Mass.

NAIL MACHINES
For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

IMPORTANT.

First-class new manufacturing property to let. Most substantial brick buildings, high ceilings, many windows, Engine, Boiler, line shafting, steam heat, draughting room, three offices, large lot. Four trunk lines railroad. Daily boats. 1½ hours from this city by railroad. Suitable for any business. Will alter to suit tenants. Strikes unknown. Have plan of property. Address

"RARE OPPORTUNITY,"

office of *The Iron Age*, 232-238 William St., N. Y.

FOR SALE.

At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c to J. Stewart Walker, Court's Agt., Lynchburg, Va.

FOR SALE.
ENGINE.

150 H.-P., Beck Automatic Cut off.
Cylinder, 16 in. Diameter.
Stroke, 24 in.
Condition, Good.

THE JACOBS CORDAGE CO.,
Harriett and Budd Sts., Cin., O.

For Quick Delivery.

1 Single Punch, 7 in. throat, No. 6, new.
1 Double Punch, 12 in. throats, No. 3, used.
1 Single Punch, 12 in. throat, No. 5, used.
1 Roll for straightening light plates, used.
1 Roll for leveling sheets, new.
3 Hackney Hammers.

WAIS & ROOS P., S. & ROLL CO.,
Cincinnati, Ohio

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

Metals Wanted.

We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

MARKLE LEAD WORKS,
St. Louis, Mo.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"

Care *The Iron Age*, 805 Fisher Bldg., Chicago.

ENGINE.

Vertical, 16 in. x 18 in. cylinder, in first-class order, complete. Price, $475.00.

BOILER.

Shell, 56 in. dia., 34 Tubes, 5 in. x 15½ ft. Price, $150.00.

Further information desired on application to

JAMES LEFFEL & CO.,
Springfield, Ohio.

Locations for Industries.

The Chicago Milwaukee and St. Paul Railway Company has a list of its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y.
Old Colony Building, Chicago, Ill.

FOR SALE—LUDINGTON IRON WORKS.

Late GEO. GOODSELL, Proprietor.

The entire plant consisting of four lathes, one shaper, one slotter, two drill presses, one planer, steam hammer, pipe cutter, stamping machine, engine and boiler, and all other machinery not enumerated. Shafting, bar iron and castings, gas pipe, iron and brass goods. Also a carload of patterns of all descriptions useful in this line. Prefer to sell all the machinery outright. We desire an offer within thirty days from parties wishing to investigate. Address,

LUDINGTON IRON WORKS, Ludington, Mich.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

SECOND-HAND
Turret and Screw Machines
FOR SALE, LOW.

No. 1 Brown & Sharpe Screw Machine, Wire Feed.
No. 2 Garvin Screw Machine, Wire Feed.
No. 2 Garvin Turret Lathe, Wire Feed.
No. 2 Windsor Screw Machine, Chasing Bar.
No. 2½ Garvin Screw Machine, Back Gears and Oil Pump.
No. 2½ Pratt & Whitney Screw Machine, Wire Feed.
No. 2½ Garvin Turret Lathe, Wire Feed and Friction Back Gears.
No. 2½ Garvin Turret Lathe, Automatic Chuck.
No. 2½ Pratt & Whitney Hub Machine.
2 No. 3 Garvin Screw Machines, Geared Friction Head and Back Gears.
No. 3 Garvin Screw Machine, Wire Feed and Friction Head.
No. 3 Pratt & Whitney Screw Machine, Friction Head.
No. 5 Brown & Sharpe Screw Machine, Chasing Bar.
No. 12 Garvin Screw Machine, Wire Feed.
3 No. 12½ Garvin Screw Machines, Wire Feed.
13 in. x 5 ft. Prentiss Turret Lathe.
15 in. Jones & Lamson Chucking Lathe.
16 in. x 6 ft. Fox Turret Lathe, Chasing Bar, complete.
16 in. x 6 ft. Fox Turret Lathe, Chasing Bar and 2-Jaw Chuck.
18 in. x 5 ft. Stiles Turret Lathe.

Photos and Descriptions on Application.

THE GARVIN MACHINE CO.,
Spring and Varick Sts., N. Y.

PHILADELPHIA STORE,
The Garvin Machine Co.,
51 No. 7th St., Phila., Pa.

PITTSBURGH
SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

No. 8 Wood St.,
Pittsburgh, Pa.

We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

FOR SALE.

About 1,500,000 lbs. Steel Plates,
from ¼ in. to 1½ in. 4 ft. x 22 ft. Very best material, low phosphorous.

500,000 lbs. Iron Tank Plates
¼ in. thick, 2 ft. 6 in. x 7 ft.

About 120,000 lbs Steel Bars
4 in. to 8 in. x ¼ in.

Large lot Angles and Channels, 3 Stacks, 40 ft. x 36 in. x 3-8 in.

The above material is all new, coated with one coating of paint, and was in use in the lately demolished Gas Holder of the Consolidated Gas Co., 21st Street and Ave. A, New York, where it may be inspected.

Also 1 50-ton hoist,
with Engine and Blocks complete. Correspondence solicited.

H. A. HITNER'S SONS,
Gaul & Sergeant Sts., Philadelphia.

FOR SALE.

We offer for sale the following plants, with all real estate, buildings machinery, fixtures and tools complete, or we will dismantle same to suit buyers.

Danville Rolling Mills and Nail Works, Danville, Pa.
Cofrode & Saylor Bridge Works, Pottstown, Pa.
Rolling Mills A and B, Catasaqua, Pa.
Rolling Mill C, Fullerton, Pa.
Irondale Furnace, Independence, W. Va.

These plants contain over 7,000 tons of machinery and equipment of every description.

C. R. BAIRD & CO.
Pig Iron,
Philadelphia, Pa.

For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

HERO STAMPING WORKS,
Room 407, Cuyahoga Bldg., Cleveland, O

TACKS.

Correspondence wanted with a man able to build and operate modern tack factory. One who can give reliable figures of cost, etc. Probable location, Eastern Ohio. Address

"TACKS," care *The Iron Age*,
509-510 Hamilton Bldg., Pittsburgh, Pa.

FOR SALE.

One No. 10 Bryant saw, with 20 saw blades, Q. & C. make; only used about two months; in perfect condition and will sell for a low price.

THE ASCHMAN STEEL CASTING COMPANY,
Sharon, Pa.

FLY WHEELS.

One 11 foot, in halves, 10 tons weight. One 8½ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

Second-hand Metal Working Machinery.

1 No. 18 Bliss Press.
1 No. 3 Bliss Press, with four roll automatic feed.
4 Chain Block Drilling and Reaming Machines.
3 ¾ in. Adt Riveting Machines, double headers, two with automatic feed.
1 16 in. x 7 ft. Putnam Gap Lathe, swings 32 in. in gap.
1 36 in. x 36 in. x 10 ft. Dustin Planer.
1 Worcester Drill Grinder.
1 6 spindle Cam Feed, Dwight Slate Drill.
1 No. 3 P. & W. Mfrs. Bench Drills, consisting of two 24 in. drills with automatic feed, on pedestal.

All the above tools are in A1 condition and will be sold at reasonable prices.
Address all communications,

THE PRATT & WHITNEY CO.,
144 Pearl St., Boston, Mass.

FOR SALE.

Foundry and Machine Shop in one of the best cities of 15,000 inhabitants in Eastern Ohio. Well equipped, with large established trade on specialties. To be sold on account of death. Address "FOUNDRY," office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

FOR SALE.

Four fly wheels, each 25 feet in diameter, weighing 42 tons each, built in 12 segments and two centers, with rims turned and faced. We built these wheels for our own tin mills, and after a few months' use of them replaced them with heavier wheels. Will be sold low.

MACKINTOSH, HEMPHILL & CO.,
Pittsburgh, Pa.

FOR SALE!!
PATTERNS OF BOILER TOOLS,

Including Patents, Drawings and Business of two improved Tools now in use in the Largest Boiler Shops in the country. Home and Foreign Trade established. Other business demands attention.

Address Lock Drawer No. 19,
LIBERTY, IND.

Tack Machines For Sale.

Two Machines, 6 to 24 oz.
One Machine, 0 to 8 oz.
One Machine, 8 to 24 oz.
Also Shear for trimming stock.

Have been but little used; are as good as new.

ANDREW F. WEST,
Buffalo, N. Y.

For Sale Cheap.

One Ames Slide Valve Engine, 30 H. P.

Miscellaneous lot of shafting and pulleys in good condition.

1 36 inch Volume Blower.
1 No. 1 Pressure Blower.
1 " 2 " "
1 " 5 " "
1 18-inch Ventilator.
1 24 " "
1 30 " "
1 36 " "

All new and in perfect condition. Will be sold at less than one half of cost.

M. E. CONDON,
105 Broad St., Utica, N. Y.

FOR SALE.

Hydraulic Elevator, with electric motor, pump and water tank, complete. Can be bought cheap on liberal terms. Apply

LEOPOLD ADLER, Savannah, Ga.

RECEIVER'S SALE
OF
Jefferson Iron Works Property,
AT
Steubenville, Ohio,

at one o'clock, Central Standard Time, Monday February 27, 1899, consisting of one Blast Furnace of the following dimensions. Stack 78 feet high, 18 feet 3 inches in the bosh, equipped with four Gordon-Whitwell hot blast fire brick stoves, four blast engines, two of them equipped with Corliss steam cylinders, ample boiler capacity, pumps, etc. Furnace at present in operation and making 225 tons of Bessemer Iron per day, also rolling Mill and Cut Nail Factory, with 128 Cut Nail Machines. Rolling mill equipped to roll steel Skelp of sizes up to 15¼ inches wide.

The property is located on three lines of railway, and consists of about forty acres of surface ground, besides a coal field of over seven hundred acres of the celebrated Steubenville Shaft vein of Coking Coal. Terms of sale Cash, or one-third cash, balance secured by mortgage and payable in one and two years in equal amounts with interest at six per cent.

SPAULDING K. WALLACE, Receiver,
Steubenville, Ohio.

Trustee's Sale
OF
ENGINES, PUMPS, PIG IRON, SCRAP IRON, ETC.

As trustee in a deed of trust executed to me as trustee on the 24 day of September, 1898, by Edward P. Lee, and at the request of the beneficiary therein, default having been made in the payment of the debt secured in said deed, I shall proceed to sell, at public auction, on TUESDAY, FEBRUARY 28th, 1899 at twelve o'clock, at the Lynchburg Iron Company's Furnace, Lynchburg, Va., the following personal property, conveyed to me in said deed:

Six horizontal boilers.
One large horizontal blowing engine.
One 8, Knowles steam pump.
One plunger boiler pump.
Thirteen wrought iron filling barrows.
One pair Fairbanks' charging scales.
One pair Richie Bros.' pig iron scales.
Laboratory fixtures, scales, etc.
One large Knowles pressure pump.
One lot tools, carts, chains, blocks, etc.
Eighty tons fire brick bats.
Twenty five thousand fire brick.
Blacksmith shop and contents.
Commissary building.
Three shed buildings.
One office building.
Three tons eight inch cast iron pipe.
Two hundred feet six inch wrought iron pipe.
One hundred feet six inch wrought iron pipe.
Ten tons cast iron. One engine and boiler house.
Ten tons wrought iron.
Some two hundred tons cast iron bottom scrap, and one lot re brick.
Terms of sale cash.

N. C. MANSON, Jr., Trustee.

FOR SALE OR LEASE on easy terms, 5 lots situated in Jersey City, for manufacturing purposes. Close by all ferries and railroads; shipping facilities unequaled. Address "H., 216," care *The Iron Age*, New York.

EUGENE V. N. BISSELL, Auctioneer.
E. BISSELL & CO.,
Successors to
HAYDOCK & BISSELL
WHOLESALE
HARDWARE AUCTIONEERS,
13 Murray St. and 15 Park Place, N. Y

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for *immediate operation,* consisting of *complete Skelp Mill,*

6 Double puddling furnaces,
3 Heating furnaces,
3 Trains of rolls; also
2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

For particulars address the Secretary of The Board of Trade, Worcester, Mass.

An Opportunity for Capital.

Barbed Wire, Wire Nail and Woven Wire Fencing Plant For Sale.

Most rapid machinery in use. Goods best quality. Well established trade. Can be increased to any extent, and machinery can be moved to other location if desired. Make our own woven wire fence machines at low cost. Other machinery will be built for purchaser if wanted. Address

"WIRE,"
care *The Iron Age*, New York.

Capital to Invest.

Correspondence is invited by a party of Capitalists lately identified with the Iron and Steel business, from any manufacturer who has an established business and desires additional capital, or wishes to dispose of his property. Others who have articles of merit and desire to sell, or require more capital are requested to communicate with us by addressing communications to "W. L. G.," care *The Iron Age*, New York.

BLAST FURNACE MACHINERY.

Wanted, catalogues, circulars and photographs of all kinds of Blast Furnace Machinery and special Dies.

THE MILLOM & ASKAM HEMATITE IRON CO., Limited.
MILLOM, CUMBERLAND, ENGLAND.

FOR SALE.

One 22 x 42 in. Wright Corliss Engine. Band Wheel 16 ft. x 36 in.

This engine is in first-class order and will be sold at a very reasonable price.

CRANE CO., - - Chicago.

A CORPORATION in the metal line, doing a good, safe business, needs services of an energetic man, and additional capital to handle fast increasing business. $10 000 to $25,000. Open for thorough investigation.

Will answer principals only.

"CORPORATION,"
care *The Iron Age*, New York.

MANUFACTURERS.

GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

Address, "M. M. N.,"
office of *The Iron Age*, New York.

DE

SCRATCH CLOTH

for cleaning files and other tools.

WIRE CABLE

in job lots, at very low prices.

WALSH'S SONS & CO.
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.

Telephone Call, 897 18th St

Morton B. Smith,

243 FRONT ST., NEW YORK,

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 54 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

WM. H. PERRY CO.,
Providence, R. I.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited
C. BOTJER, 405 Newark St., Hoboken, N. J.

AMERICAN RAILWAY SUPPLY COMPANY,

Manufacturers of

Baggage, Hotel and Time Checks, Metal Figures and Letters and everything in the line of Stamped Metal Work.

24 PARK PLACE, NEW YORK.

We have purchased the entire equipment of the Warwick Cycle Mfg. Co. of Springfield, Mass., and are offering it in lots to suit purchasers at prices which we believe will insure quick sales.

This consists of over 250 machine tools and their appurtenances and a large amount of material both raw and in process.

The tools are all modern and in excellent condition (in fact a large portion of them are nearly new) and are adapted to general machine shop use.

We are also offering the Real Estate, which consists of a modern three story building 325 ft. x 52½ ft., with ells, built in 1892.

This property is equipped with a Steam plant of 125 H. P., Electric Light plant, patent Hot Water Heating system, sprinklers, etc.

It is but ten minutes' walk from the Massasoit House and has a railroad track side of building to facilitate shipping.

It is suitable for any kind of manufacturing business and will be sold at a great sacrifice.

Any one looking for a manufacturing property will find it profitable to look this over before purchasing.

Full particulars as well as a complete list of the Tools, etc., will be mailed upon application.

A. B. Pitkin Mchy. Co.,
Providence, R. I.

CHEAP.

Cameron Pumps.
Centrifugal Pumps.
Root Blower No. 2.
Large Sturtevant Blast Wheels.
Exhaust Fan, Ventilating Fans.
Guild & Garrison Double Vacuum Pump.

Above all in **perfect condition**, used only **two weeks** and will be sold **very low.**

VARIETY MACHINE CO.,
Warsaw, N. Y.

FOR SALE.

A well established wholesale hardware business in a large Western city. Splendid opportunity to secure a business in good running order. Stock has been purchased upon a low basis, and will bear investigation. At present will inventory about $15,000—not for trade but for sale upon a cash basis. If you want a business of this character it will pay you to investigate quickly. Satisfactory reasons will be given for retiring from business.
Address P. O. BOX 324, Cincinnati, O.

To Manufacturers.

I want a line of goods on commission, to sell the Hardware and General store trade in Michigan. Address
LOCK BOX 159, Lansing, Mich.

A Reversing Valve.

Valuable Patent For Sale Cheap.

Simple, durable, and can be made very cheap; answers the purpose of Throttle as well as for Reversing. A splendid investment to party taking it. For further information, address the inventor, D. W. ROY,
Box 431, Tucson, Arizona.

WIRE WANTED

Any one having Coarse Wire (Iron or Steel), odd lots, size from No. 3, wire gauge, to No. 16 long pieces, they would like to sell, write to

The Horace Lamb Wire Co.,
Northampton, Mass.

Texas Shop Cheap

Well equipped foundry, boiler and machine shops suitable for engine and railroad work. Contain wheel press, planers and shapers; lathes 15 to 44 in. swing up to 26 ft. bed. One and one-half acres of land. Big lot of patrons and business good the year round. Reason for selling—disability and old age.

Address A. DEMARCE, Texarkana, Texas.

FOR SALE.

60 TONS FAIRBANKS' STANDARD RAILROAD TRACK SCALES.

Been used eighteen months under cover. "Good as New."
Also want 80 H. P. Tubular Horizontal Boiler 60 x 16—3½ or 4 inch Tubes.

JOHNSON & CO.,
Mt. Gilead, - - Ohio.

BUSINESS OPPORTUNITY.

$10,000 to $15,000 will purchase profitable Hardware and Agricultural Implement business, located at Rhinebeck, N. Y. Established by present owners 23 years ago, who now wish to retire.

J. H. ASHER & CO.,
RHINEBECK, N. Y.

BUSINESS OPPORTUNITY.

A practical young man wanted to invest in one-half interest in an old established manufacturing house in Northern Ohio. Object, aid in managing and sales. Good salary. Best of references. Address with reference,
"BUSINESS OPPORTUNITY,"
care *The Iron Age*,
312 Cuyahoga Building, Cleveland, O.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

WANTED.

Having extra space, power and machinery, centrally located in Chicago, we desire to add some staple article or would purchase or manufacture on royalty patent already on the market. Address,
"STAPLE," care *The Iron Age*,
805 Fisher Bldg., Chicago, Ill.

AGENCY WANTED.

A Chicago firm with central location desires western agency for polishing machinery and polishing supplies. Have been manufacturing for the polishing trade of the country for past 10 years. Address
"F. C.," care *The Iron Age*,
805 Fisher Bldg., Chicago.

TYPEWRITERS.

We will exchange typewriters, all guaranteed, and send subject to trial, in exchange for merchandise. What will you offer?
BROWNE & MANSFIELD, 245 Broadway, New York.

TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address
"H.,"
office of *The Iron Age*, 70 Kilby St., Boston, Mass.

WANTED.

Jobs and Specials for SPOT. Send particulars.
BROWNE & MANSFIELD,
245 Broadway, New York.

Wanted, to Purchase, A WASHOE PICK MACHINE.

Either new or second hand. Any party having one for sale, send description and quote lowest, spot cash, price. Address
"WASHOE PICKS,"
office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa

WANTED.

First-class mechanical designer with a few thousand dollars capital to take an active interest in an old established and growing business, with a good salary and dividends on money invested. Apply, giving references and amount of money you are willing to invest. Address
"INVESTMENT,"
Care *The Iron Age*, New York.

Blast Furnaces For Sale.

I have for sale five blast furnaces, one in Virginia, one in Pennsylvania, one in Tennessee and two in Alabama. Some of these furnaces own their own coal, coke ovens and ore and could be started up very quickly. They can be sold **far below the original cost.** Three of these are strictly modern furnaces.

For particulars address
J. H. HILLMAN,
No. 8 Wood Street, Pittsburgh, Pa.

PHILADELPHIA SALES AGENCY.

FITCHBURG MACHINE WORKS.
P. BLAISDELL & CO.
BRADFORD MILL CO.
BICKFORD DRILL & TOOL CO.
CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second Hand Machinery.
JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia

MICHIGAN COLLEGE OF MINES.

Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address
DR. M. E. WADSWORTH, President,
Houghton, Michigan.

FOR SALE

at a bargain the following second-hand Foundry Equipment:

1 Colliau Cupola, melting capacity four tons per hour, in first-class condition.
1 Colliau Cupola, melting capacity six tons per hour, in fair condition
1 No. 8 Sturtevant Blower, in good condition.
1 No. 10 Sturtevant Blower, in good condition.
5 36 in. x 53 in. double geared cast iron Rumblers.
1 26 in. x 43 in. single geared cast iron Rumbler
All can be seen at our works.

GENERAL ELECTRIC COMPANY,
Schenectady, N. Y.

LANDS WANTED

Containing Coal, Iron, Copper, Lead, Zinc and other minerals.
Also Timber Lands.

NICHOLSON & CO.,
150 Broadway, New York.

NO. 32 CLIFF ST.,

four story brick building, to let from May 1: suitable for the iron business.
CHARLES S. BROWN, 59 Liberty St., N. Y.

For Sale.

BUCKEYE ENGINE.

125 Horse Power, Cylinder 14½ x 24 complete with 75 ft. new 24 inch Belt, Cap Stone, Jack Shaft and all regular attachments; almost new. Send for particulars to

THE MARSHALL & HUSCHART MACHINERY CO
62 and 64 So. Canal St., Chicago.
19 So. Water St., Cleveland.

WANTED.

File Forger. One who can temper or grind can hear of a rare chance to invest small amount. Address

"FILE,"
care *The Iron Age*, New York.

FOR SALE.

Two Pulleys, 7 ft. diam., 42 in. face, 10 in. bore; Three Pulleys, 7 ft. diam., 34 in. face, 7 in. bore; One Shaft, 13 ft. long, 10 in. diam.; Two Shafts, 10 ft. long, 7 in. diam.; Five Carriages and four Couplings, all for $400.00.

EDWARDS,
108 West 101st St., New York.

STEAM HAMMERS.

PATENTED HYDRAULIC MACHINERY. } Riveting Machines, Flanging Presses, Punching, Shearing and Forming Machines.

Accumulators, Cranes, Pumps, Etc
WM. H. WOOD, ENGINEER, MEDIA, PA.
Builder of Special Machinery

FOR SALE.

Left hand Corliss Engine, 20 in. x 60 in., good as new, has heavy 16 in. shaft suitable for heavy fly wheel or band wheel. F.O.B. cars $600. Address "C E," care *The Iron Age*, New York.

CERTIFICATES of stock valued at one hundred and fifty thousand dollars have been placed with me, for sale, representing one of the largest and best assortments of Hardware to be found in the South and located at Galveston, the largest Cotton Port in the World, enjoying the results of many steamship lines already inaugurated, as well as the anticipation of others at an early date. The Southern Pacific Steamship and Railway Company of California has lately acquired valuable terminal franchises at this point, consequently there is every indication of rapid trade growth and a marvelous development of the city proper. This business is now in its fifty-second year.

Address A. J. WALKER,
Stock and Bond Broker, Galveston, Texas.

FOR SALE.

An old established jobbing and retail stock of hardware, in a prosperous Western city of 20,000 people and a railroad center. Established in 1866 and the owner now wishes to retire, after 33 years' continuous and prosperous business. Will be sold cheap. No trade. Address "No. 117," care *The Iron Age*, Commercial Building, St. Louis.

Iron Merchants

in London with branch office on the Continent, solicit agencies for American goods, Nails, Wire Joists, etc. Address 14/26, care IRONMONGER, 42 Cannon Street, London, England.

THE LATEST BOOKS.

Hand Book of Metallurgy. Translated by Henry Louis, M. A. By DR. CARL SCHNABEL. Illustrated. 876 and 732 pages, two vols. cloth. $10.00

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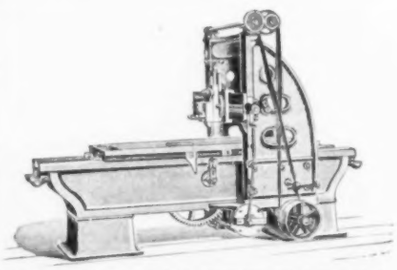

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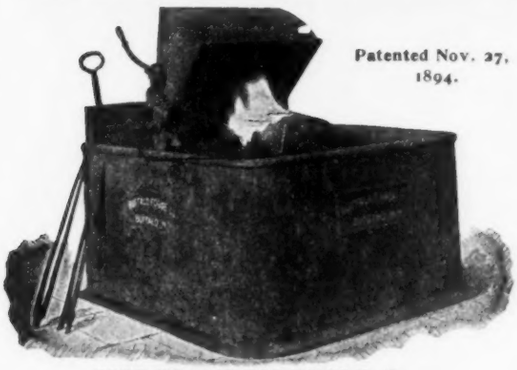

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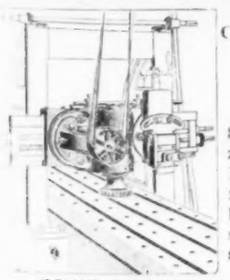

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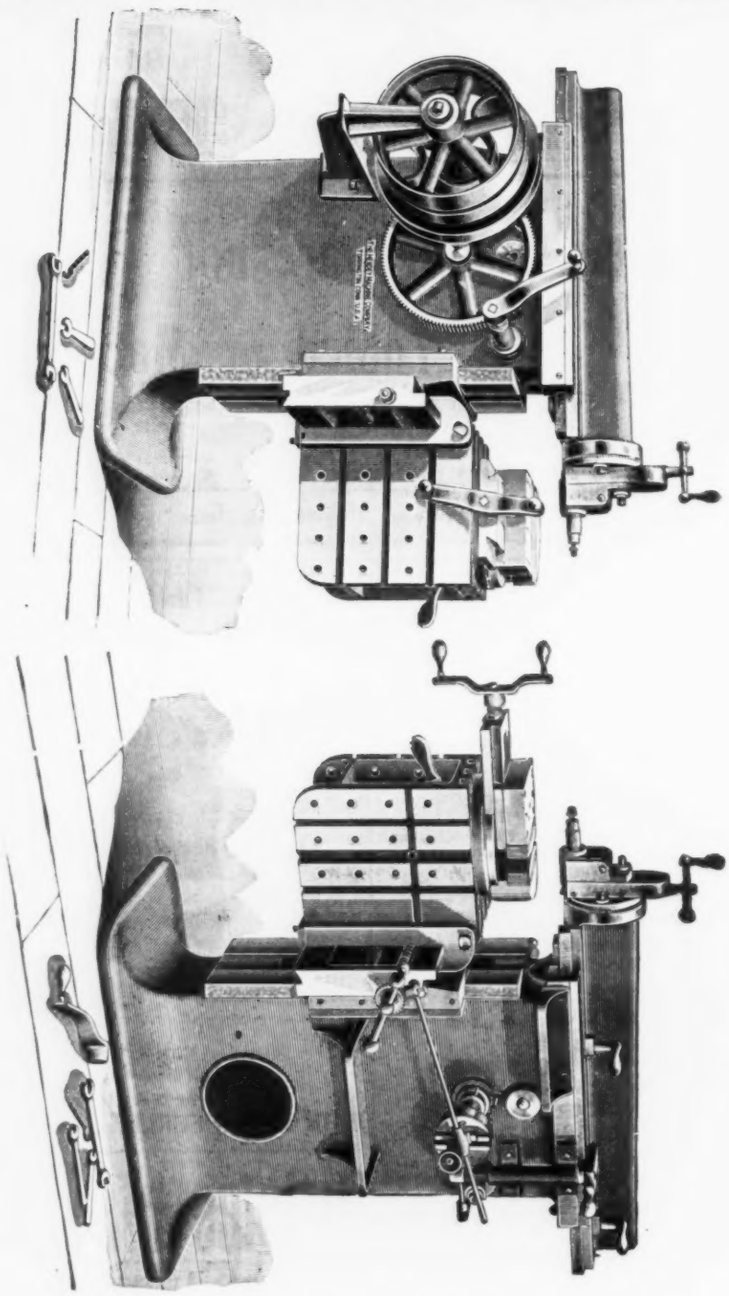

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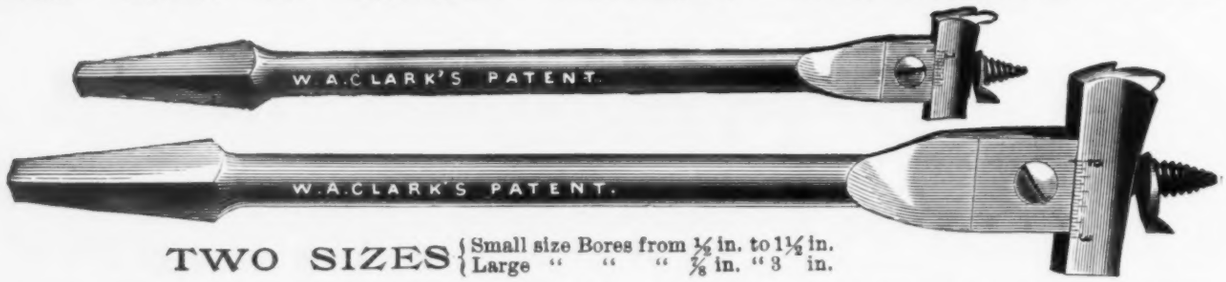

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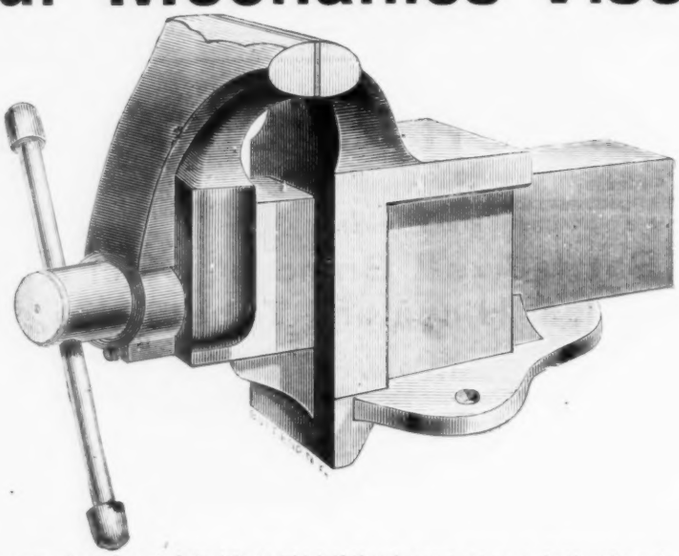

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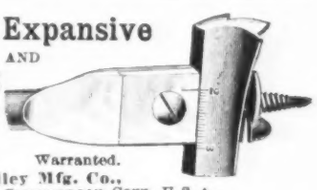

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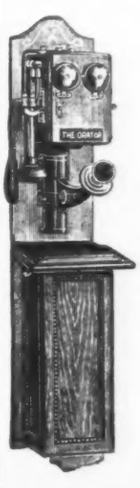

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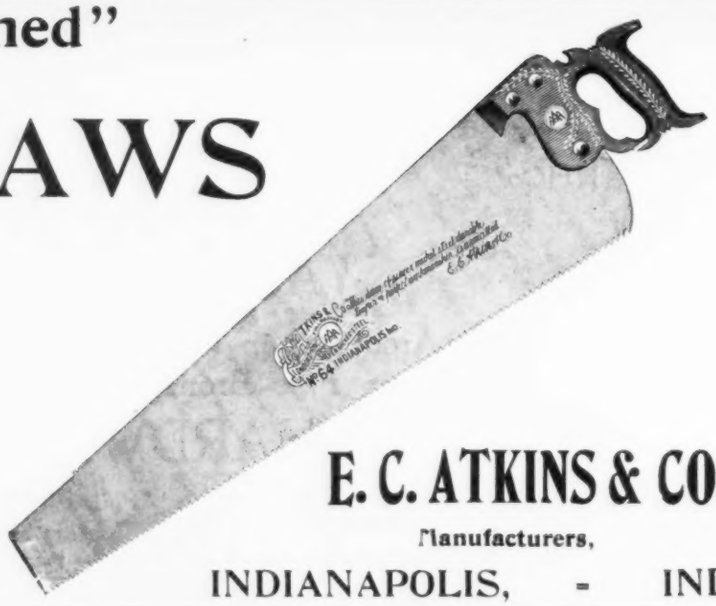

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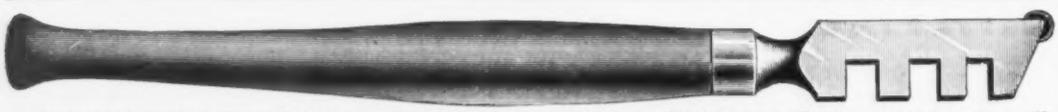

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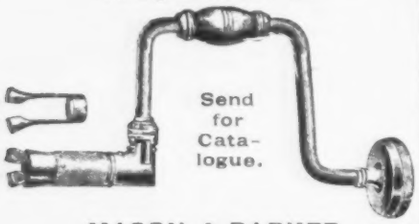

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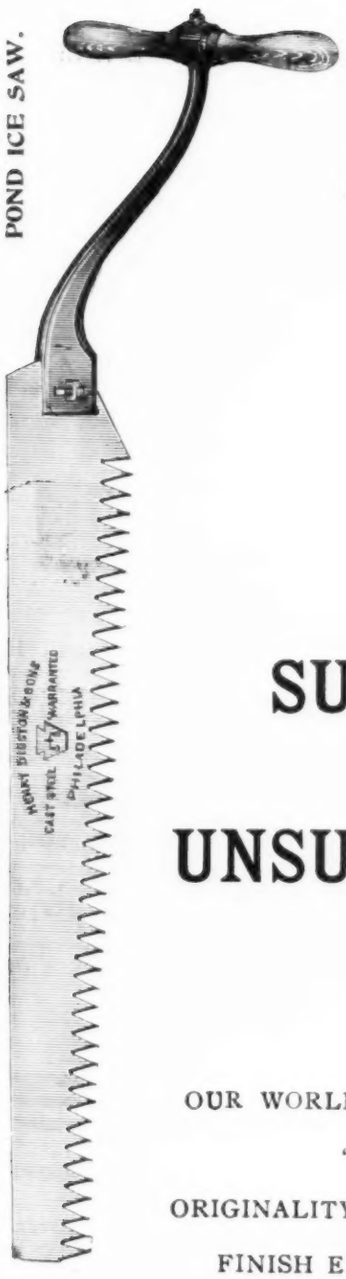

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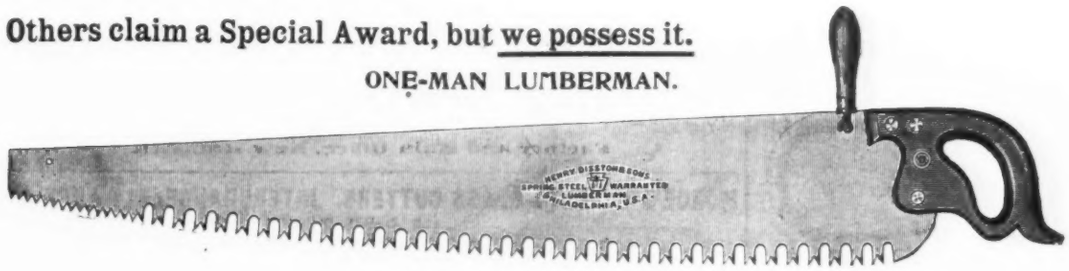

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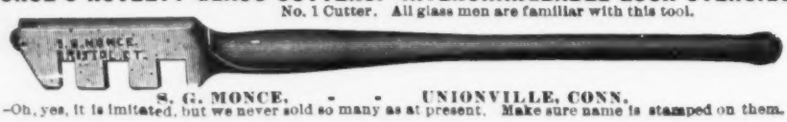

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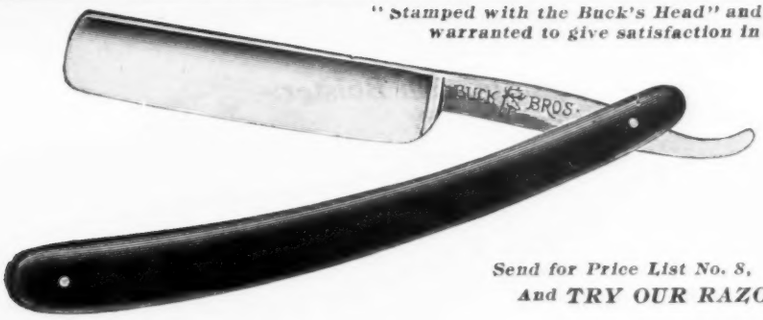

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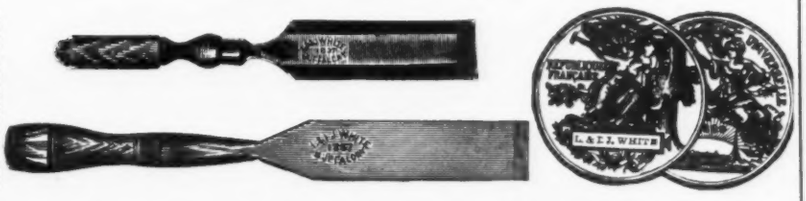

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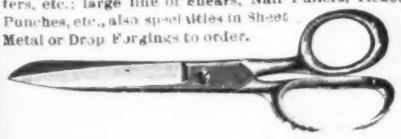

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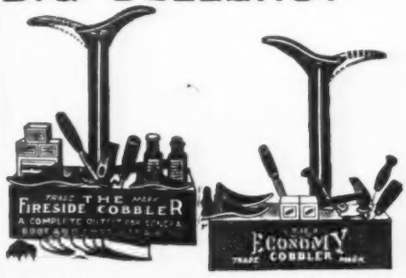

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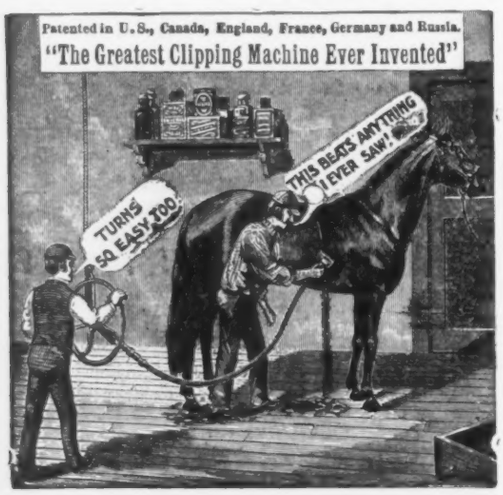

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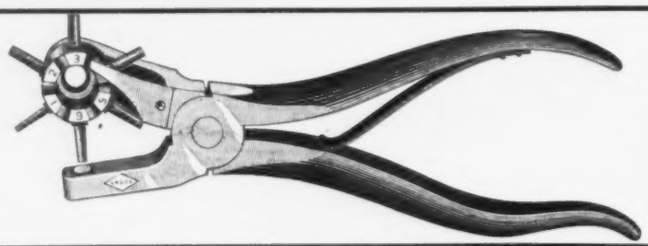

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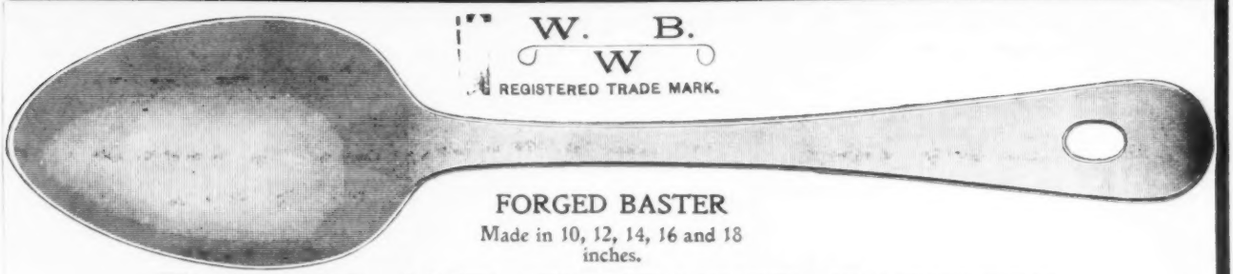

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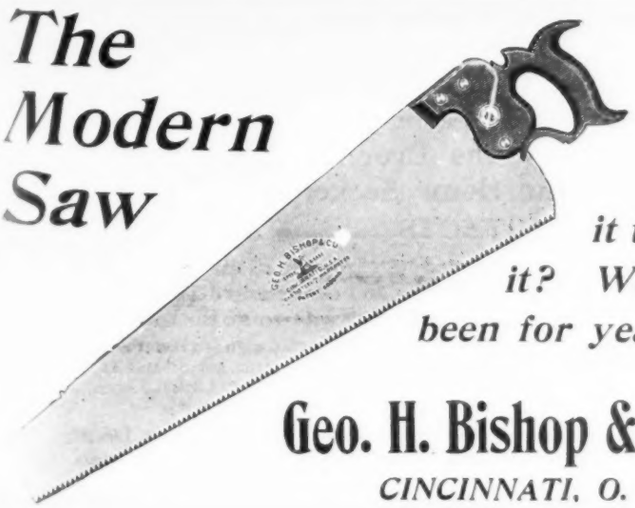

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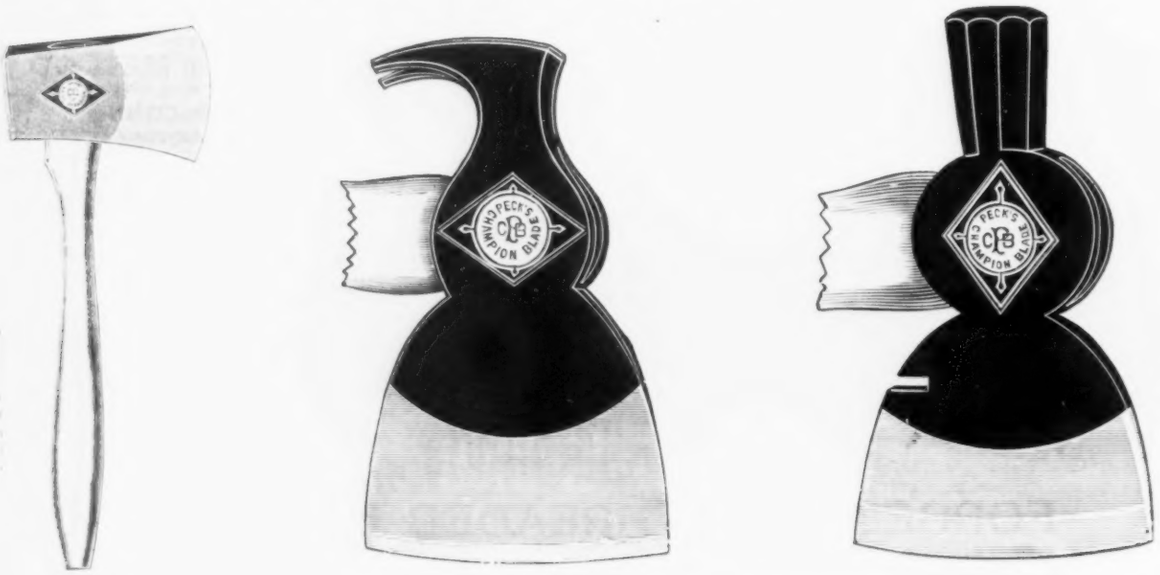

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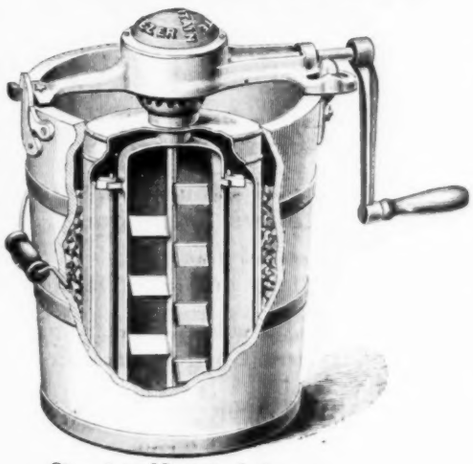

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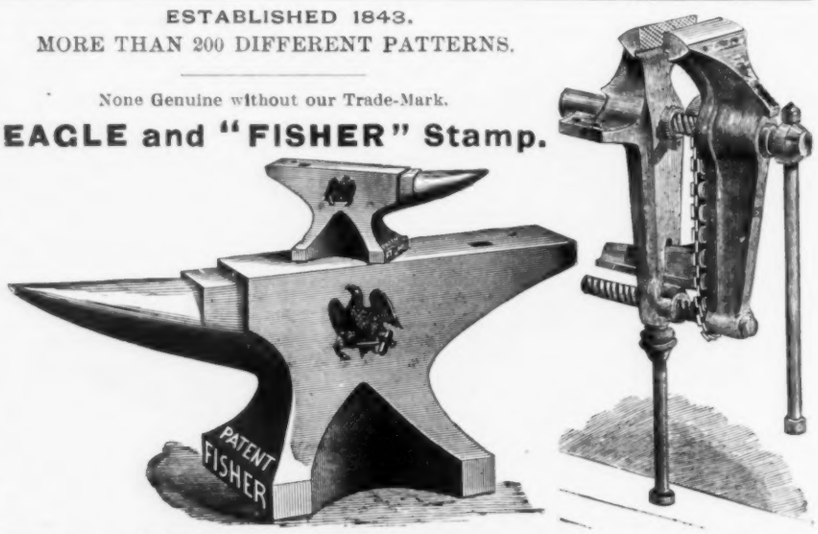

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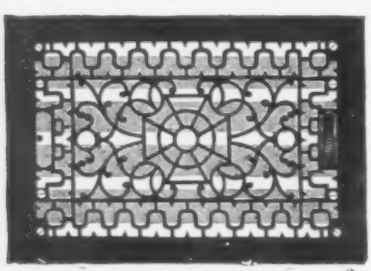

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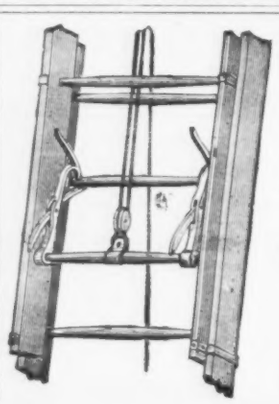

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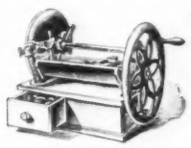

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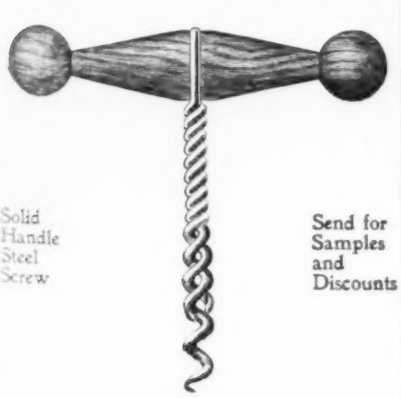

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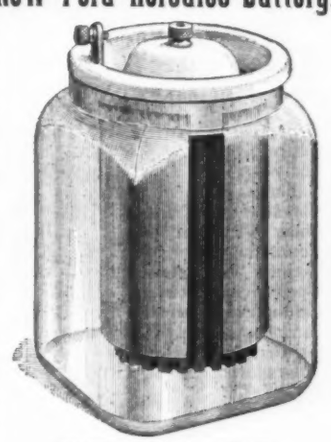

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Counter Showcases.
Upright Showcases.
Ceiling Arrangement.
Sampling Goods.
Signs in the Store.
Pillars for Displaying Goods.
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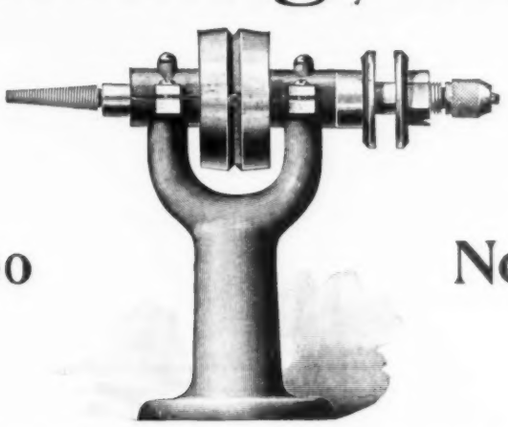

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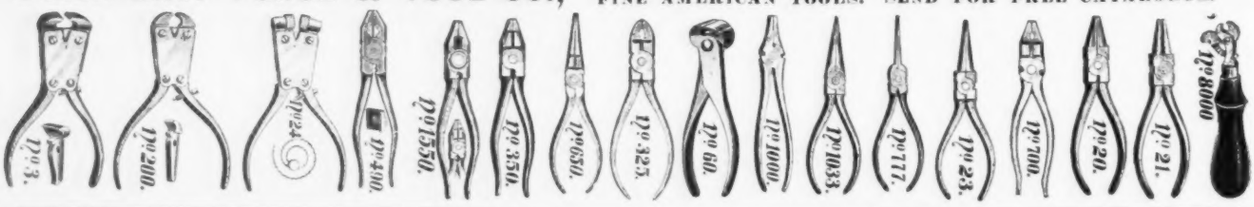

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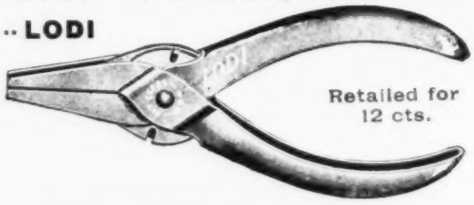

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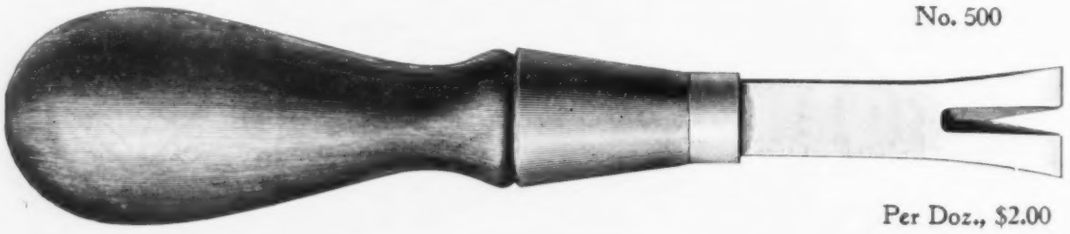

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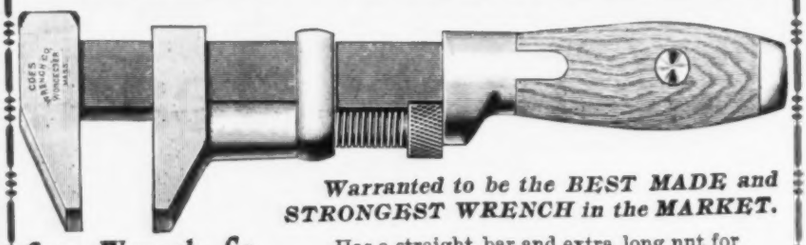

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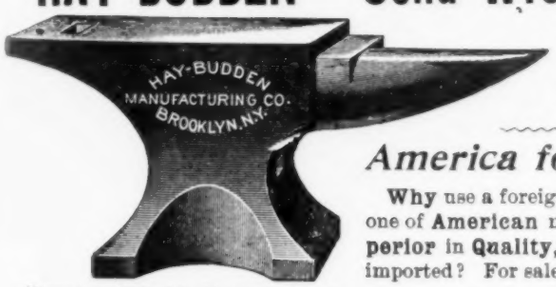

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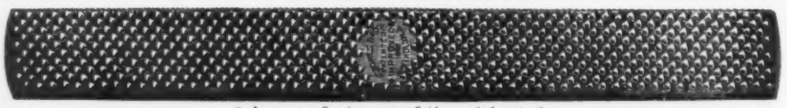

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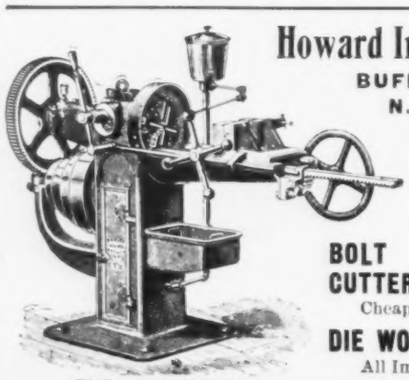

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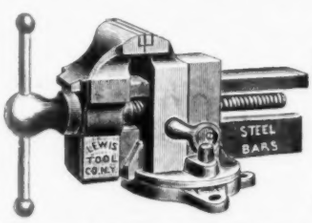

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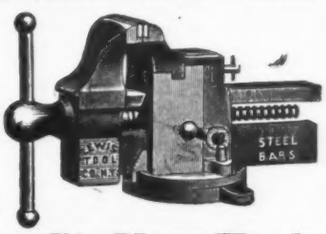

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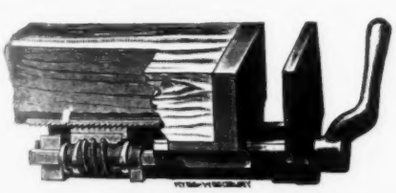

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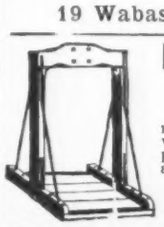

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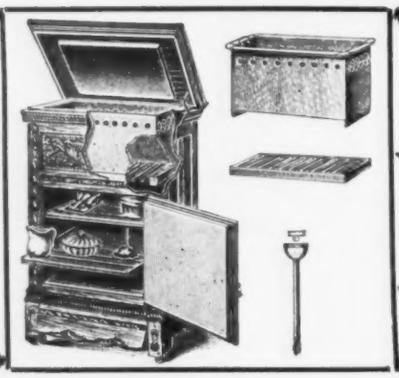

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Our factory is never idle. We have not shut down since 1874.

A perfect and complete Refrigerator is manufactured every six minutes.

Over half a million people are using "White Mountain" Refrigerators. Everyone satisfied.

Branch Offices: *Boston, New York City, Columbus, Minneapolis, Denver, San Francisco, Dallas, Tex., and St. John, N. B.*

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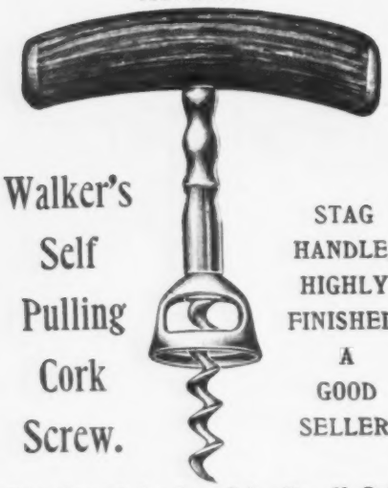

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This Wrench can be furnished with long Nut or Sleeve.

COMBINATION WRENCH.

Case-Hardened Throughout. Parts Interchangeable.

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For pumping out SUBWAYS and MANHOLES, emptying Catch Basins, etc.

Will pump by hand anything limpid enough to flow and which will pass through the 3-inch suction and discharge.

Weighs less than 50 lbs. complete.

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Has a.... BEARING Which No Other Egg Beater has,

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The .... MOST PERFECT EGG BEATER On the Market.

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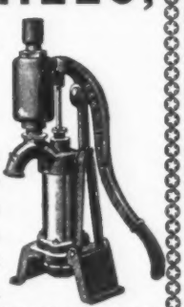

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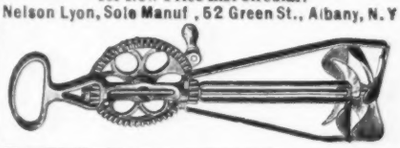

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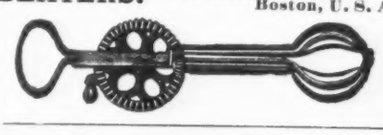

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"ONLY TWO PARTS TO CLEAN."

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No. 10 and 12 are especially adapted for Butchers.
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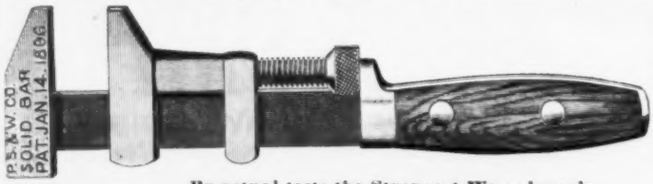

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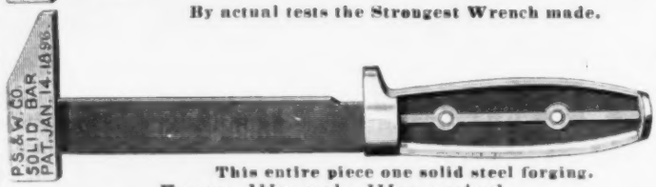

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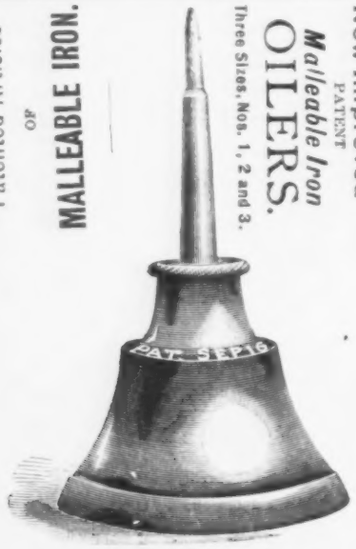

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Strongest in the market.

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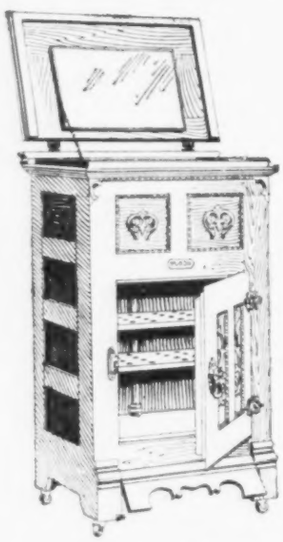

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The Yukon is made in two styles, with ***Removable Flues,*** and with the ***entire Ice Chamber Removable.***

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Thoroughly seasoned ash lumber.
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Solid bronze hardware, Roman gold finished.
Zinc lined. Patent casters.
Galvanized iron flues, ice rack and shelves.
The shelves being so constructed that small dishes placed upon them will not tip over.
Patent Trap, connected with waste pipe in bottom of provision chamber, where it is most accessible, both trap and waste pipe being easily removed cleaned and replaced, without a back-breaking process or poking with a stick.
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Buy the Yukon and you will have the best Refrigerator made as well as an elegant piece of furniture.

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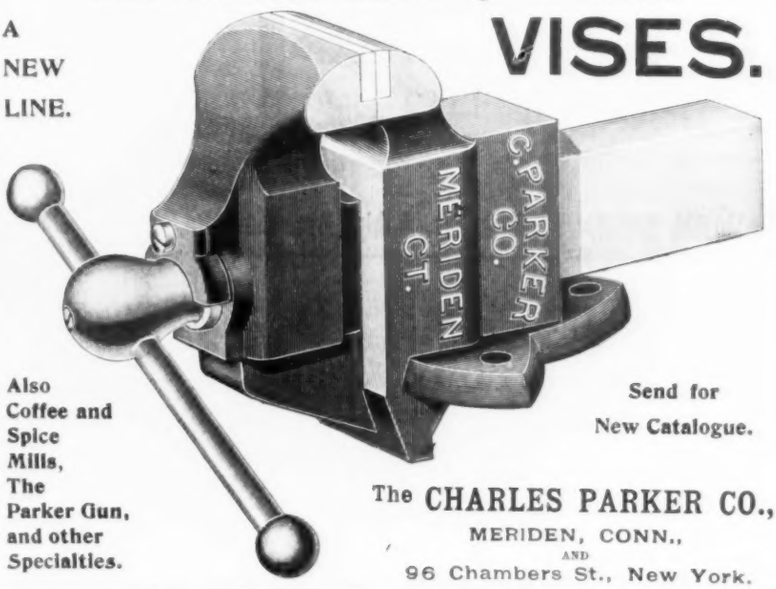

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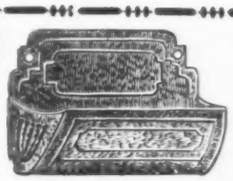

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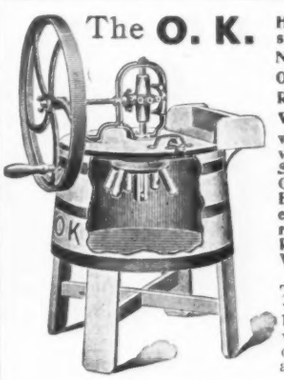

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The large fly wheel has a broad rim, to which a belt can be attached.

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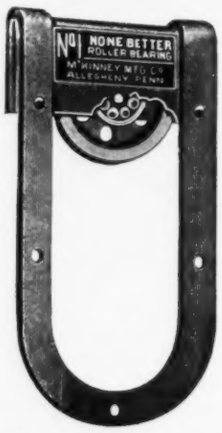

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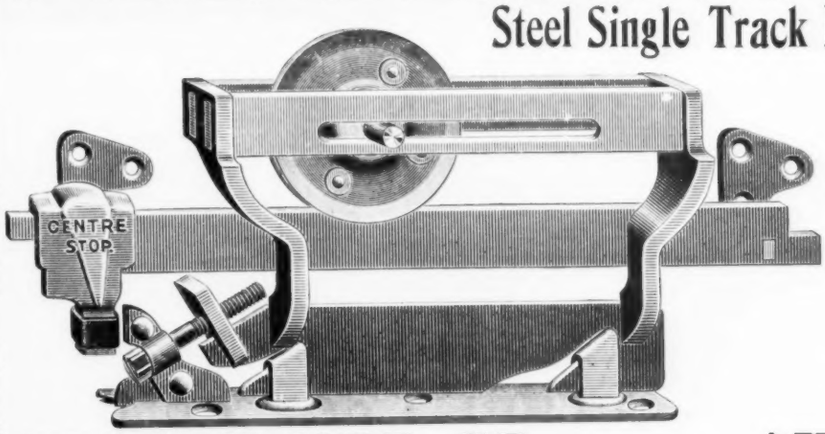

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For wood or metal pail. Use foot or hand pressure.
No springs to rust. Every Wringer Warranted
Made of first-class malleable iron.
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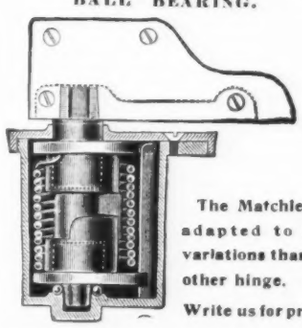

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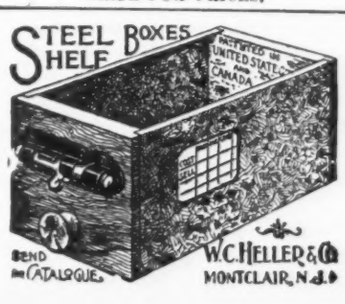

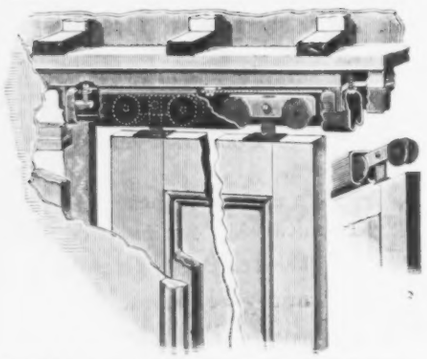

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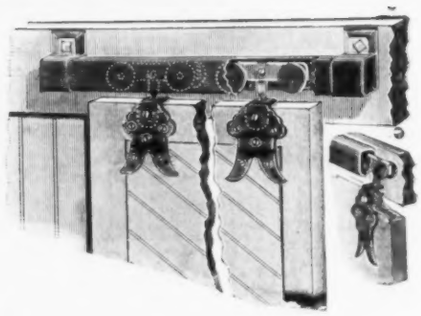

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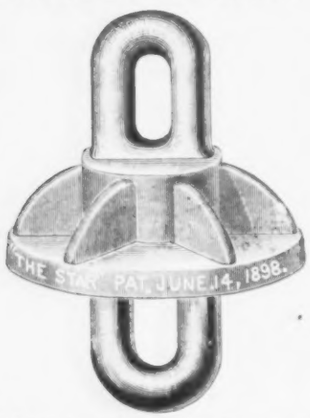

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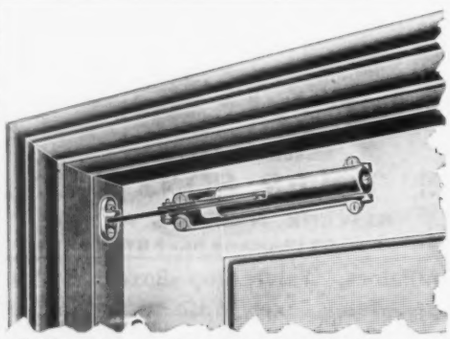

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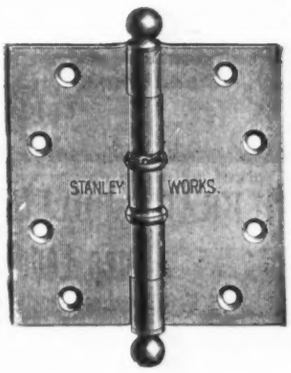

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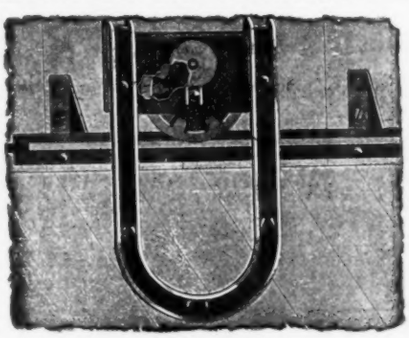

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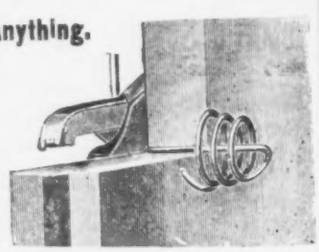

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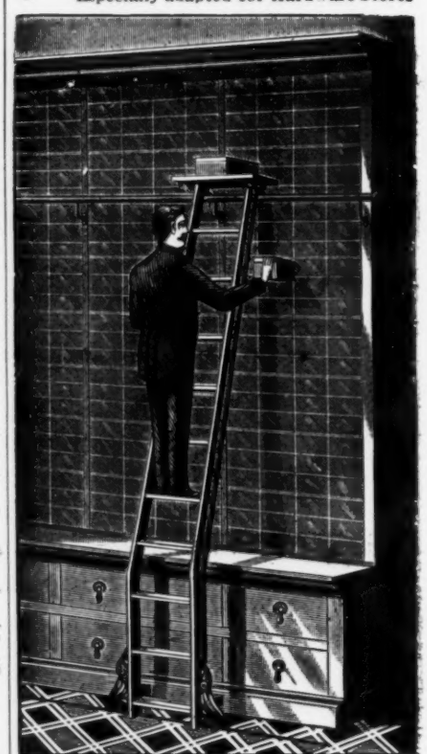

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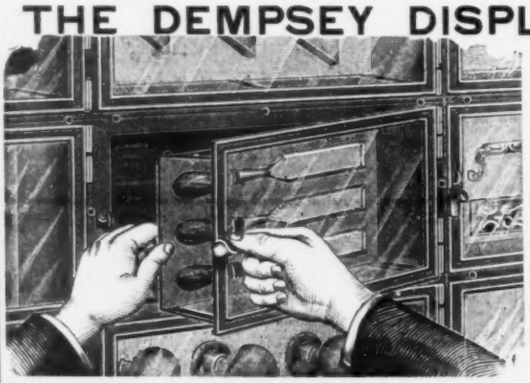

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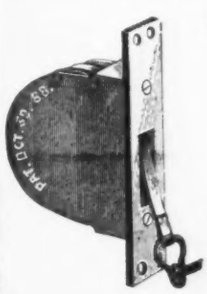

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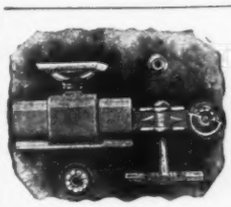

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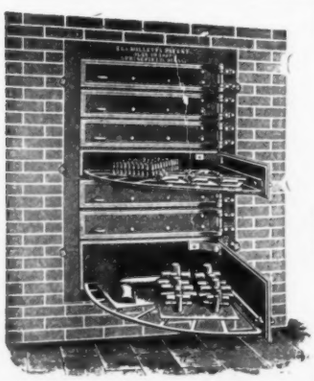

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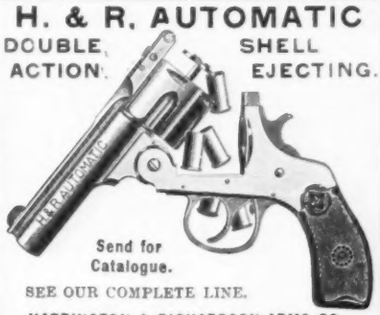

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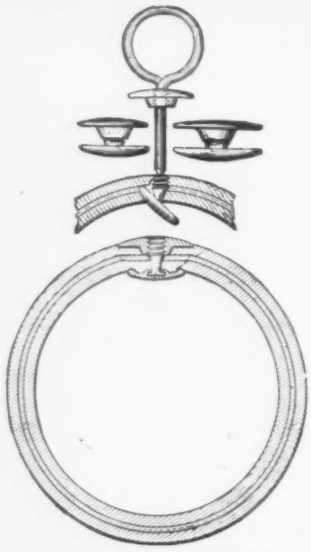

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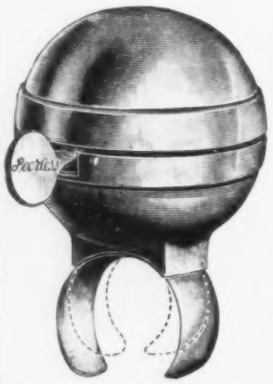

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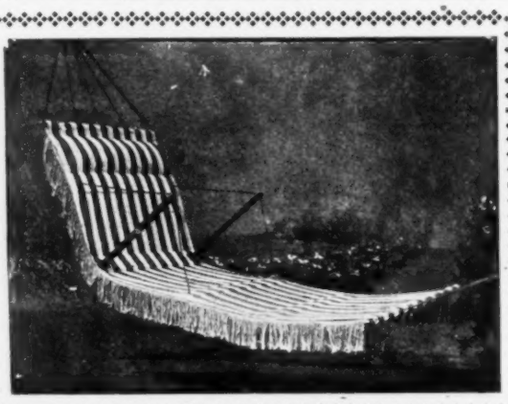

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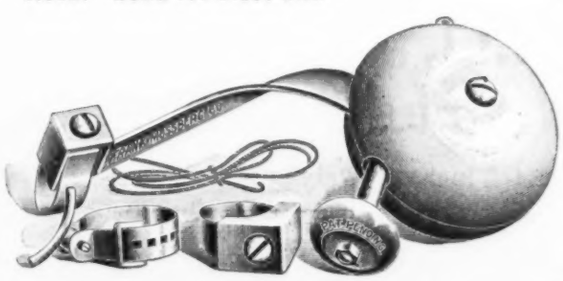

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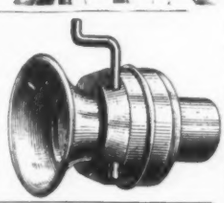

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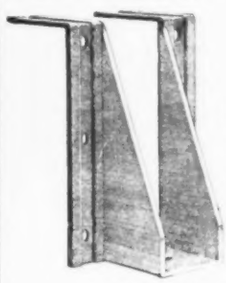

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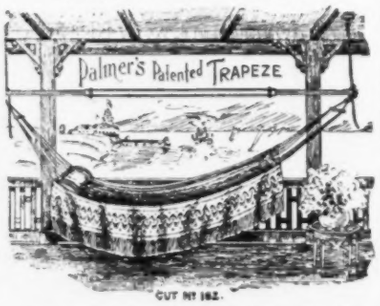

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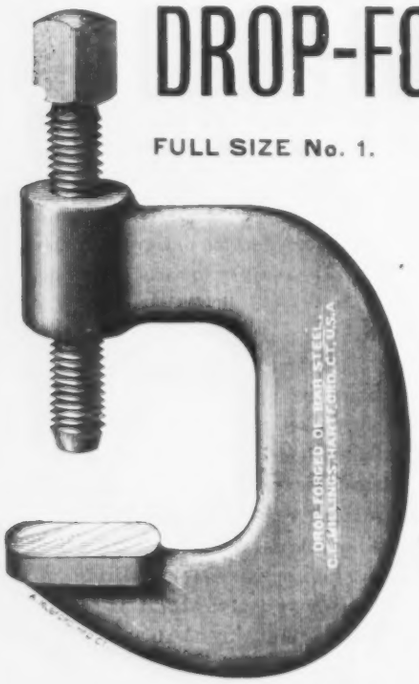

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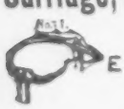
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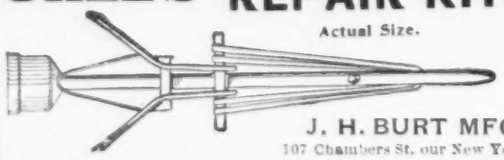
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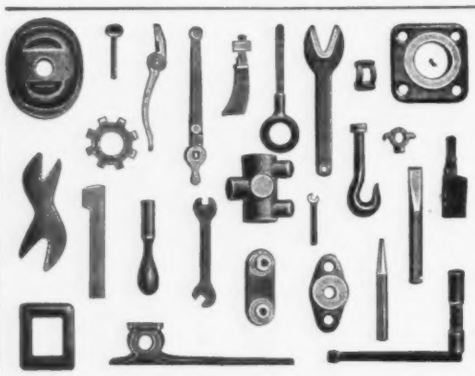

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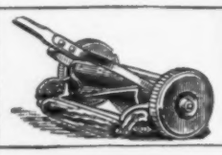

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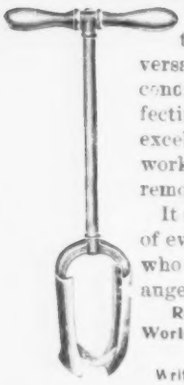

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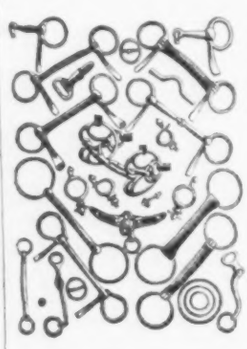

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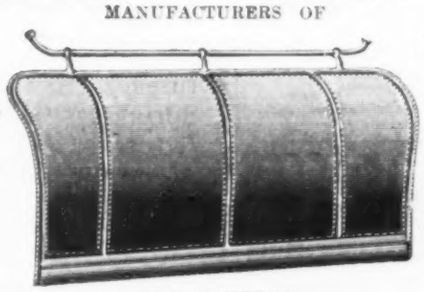
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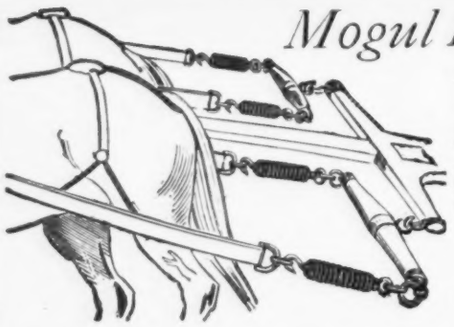

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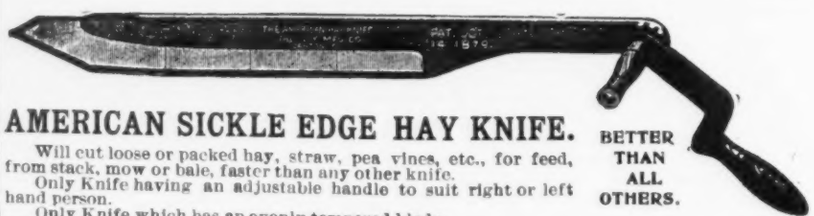

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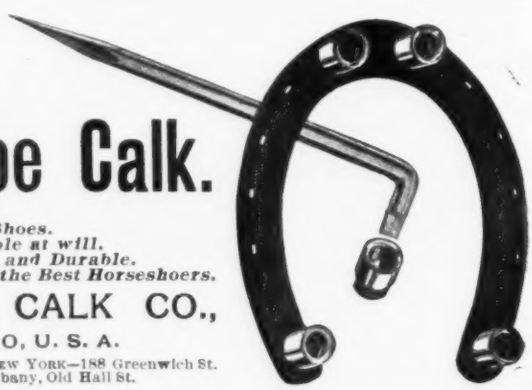

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Withington & Cooley Mfg. Co., Jackson, Mich.

Air Compressors.
Baird, U. Machinery Co., Pittsburgh, Pa.
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Markham Air Rifle Co., Plymouth, Mich.

Air Moving Machinery.
Howard & Morse, 45 Fulton, N. Y.

Alloys.
Blackwell, Geo. G., Sons & Co., Liverpool, England.

Aluminum.
Pittsburgh Reduction Co., Pittsburgh.
Scovill Mfg. Co., Waterbury, Conn.

Aluminum, Brass and Bronze.
Clark, John W., Albany, N. Y.

Ammunition.
Peters Cartridge Co., Cincinnati, O

Anti-Friction Metals.—*See Babbitt Metal.*

Ankle Brace.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Anvils.
Eagle Anvil Works, Trenton, N. J.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Anvil and Vise (Combination).
Fulton Iron & Eng. Wks., Detroit, Mich.

Apple Parers.
Goodell Co Antrim, N. H.
Reading Hardware Co., Reading, Pa.

Atlas Metal.
Trenton Malleable Iron Co., Trenton, N. J.

Auctioneers.
Bissell, E. & Co., N. Y.

Auger Bits.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Jennings, Russell Mfg. Co., Deep River, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Pugh, Job T., Phila., Pa.

Automatic Machines.
Automatic Mch. Co., Bridgeport, Conn.
Manville, E. J. Mch. Co., Waterbury, Conn.
Nilson, A. H. Mch. Co., Bridgeport, Conn
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Babbitt Metal.
Hertz, T. & Son, St. Louis, Mo.
Hoyt Metal Co., St. Louis, Mo.
Magnolia Metal Co., 266-267 West St., N. Y.
Markle Lead Works, St. Louis, Mo.
Merchant & Co., Philadelphia, Pa.
Nassau Smelting & Refining Wks., 28th St. & North River, N. Y.
Reeves, Paul S., Philadelphia, Pa.
Standard Smelting Wks., 389 Canal St.

Bale Ties.
American Steel & Wire Co., Chicago, Ill.
Griswold Wire Co., Braddock, Pa.
Wilson, H. P. & H. F., 577-579 Tenth Ave., N. Y.

Ball Floats.
Naugatuck Mfg. Co., Naugatuck, Conn.

Barb Wire and Fence.
American Steel & Wire Co., Chicago Ill.
Dillon-Griswold Wire Co., Sterling, Ill.
Washburn & Moen Mfg. Co., Worcester.

Bar Iron.
Etna-Standard Iron & Steel Co., Bridgeport, Ohio.
Allentown Rolling Mill, Allentown, Pa.
Brown & Co., Inc. Pittsburgh, Pa.
Burden Iron Co., Troy, N. Y.
Green Ridge Iron Works, Scranton, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Minnesota Iron & Steel Co., Minneapolis.
Sternbergh, J. H. & Son, Reading, Pa.

Basters.
Wallace Bros., Wallingford, Conn.

Bathtubs.
Morton Mfg. Co., Ft. Wayne, Ind.

Bearings.
Ball Bearing Co., Boston, Mass.

Bellows.
Christen, F. & Sons, St. Louis, Mo.
Scott, Geo. M., Chicago, Ill.

Bells and Gongs.
Bevin Bros. Mfg. Co., East Hampton.
Bristol Bell Co., Bristol, Conn.
Hill, N. N., Brass Co., E. Hampton, Ct.
Johnson, Geo., Catasauqua, Pa.
Miller, Edward & Co., Meriden, Ct.
Mossberg, Frank Co., Providence, R. I.
Schoverling, Daly & Gales, 345 B'way, N. Y.
Starr Bros. Bell Co., Easthampton, Ct

Belt Dressing.
Dixon, Jos. Crucible Co., Jersey City, N.J.

Belt Hooks.
Bristol Co. Waterbury, Conn.
Pratt, Wm. E. Mfg. Co. Chicago, Ill.
Talcott, W. O., Providence, R. I.

Belt Studs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Belting.
Alexander Bros., 412 N. 3d, Phila.
Ames Sword Co., Chicopee, Mass.
Boston Belting Co., Boston, Mass.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
Shults Belting Co., St. Louis, Mo.

Bending Rolls.
Hilles & Jones Co., Wilmington, Del.
New Doty Mfg. Co., Janesville, Wis.
Niles Tool Works, Hamilton, O.

Bicycles.
Ames & Frost Co., Chicago, Ill.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.
Monarch Cycle Mfg. Co., Chicago, Ill.
National Cycle Mfg. Co., Bay City, Mich.
Remington Arms Co., Ilion, N. Y.
Sterling Cycle Works, Kenosha, Wis.
Supplee Hardware Co., Phila., Pa.

Bicycle Bells.—*See Bells and Gongs.*

Bicycle Chains.
Bridgeport Chain Co., Bridgeport, Ct.

Bicycle Grips.
Jones, L. M. Co., Winsted, Ct.

Bicycle Holders.
Snow Wire Works, Rochester, N. Y.

Bicycle Lamps.
Bridgeport Brass Co., Bridgeport, Conn.
Miller, Edward & Co., Meriden, Ct.
Schoverling, Daly & Gales, 325 B'way, N. Y.

Bicycle Machinery.
Bliss, E. W. Co., Brooklyn, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Garvin Mach. Co., Spring & Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.

Bicycle Parts.
American Pin Co., Waterbury, Conn.
Belden Machine Co., New Haven, Conn.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Springfield Machine Screw Co., Springfield, Mass

Bicycle Spoke Threader.
Goodell Bros. Co., Greenfield Mass.

Bicycle Spokes.
Excelsior Needle Co., Torrington, Ct.

Bicycle Sundries.
Bevin Bros. Mfg. Co., E. Hampton, Mass.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Bristol Bell Co., Bristol, Conn.
Burt, J. H. Mfg. Co., Springfield, Mass
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hill, N. N. Brass Co., E. Hampton, Ct
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Miller, Edward & Co., Meriden, Ct.
Schoverling, Daly & Gales, 325 B'way, N. Y.
Smith & Egge Mfg. Co., Bridgeport, Ct.

Bicycle Wrenches.
Ithaca Drop Forge Co., Ithaca, N. Y.
Springfield Drop Forging Co., Springfield, Mass.

Bird Cages.
Hendryx, Andrew B. Co., New Haven, Conn.

Bits.
Conn. Valley Mfg. Co., Centerbrook, Ct.
Imperial Bit & Snap Co., Racine, Wis.

Bit Braces.
Mason & Parker, Winchendon, Mass.

Black Plate.
American Tin Plate Co., Chicago, Ill.

Blocks, Tackle.
Boston & Lockport Block Co., Boston.
Burr Mfg. Co., Cleveland, Ohio.
Fulton Iron & Eng. Wks. Detroit, Mich
Lane Bros. Co., Poughkeepsie, N. Y.

Blowers.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co. Buffalo, N. Y.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Sturtevant, B. F. Co., Boston, Mass.
Wilbraham-Baker Blower Co., Phila., Pa.

Blowers, Steam Jet.
Eynon-Evans Mfg. Co., Phila., Pa.

Blow Pipes.
Frasse Co., 16 Warren St. N. Y.

Boat Hardware.
Hungerford, U. T., Brass & Copper Co. 121 Worth St., N. Y.

Boiler Makers' Machinery.
Prentice Bros., Worcester, Mass.

Boiler Plates.
Lukens Iron & Steel Co., Coatesville, Pa
Seidel & Hastings Co., Wilmington, Del

Boiler Tubes.
Hungerford, U. T., Brass & Copper Co. 121 Worth St., N. Y.
National Tube Works Co., McKeesport, Pa

Boiler Tube Cleaners.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa

Boilers, Steam.
Babcock & Wilcox Co., 30 Cortlandt St.
Cahall Sales Dept., Pittsburgh, Pa.
Harrison Safety Boiler Wks., Phila., Pa.
Pollock, W. B. & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.
Chambers Bros. Co., Philadelphia.

Bolt and Nut Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
Burdict, O. C., Buffalo, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, Ohio.

Bolts.
American Bolt Co., Lowell, Mass.
Anthony Bates Mch. Co., Worcester, Mass.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket, R.I.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Works, Rockford, Ill.
Shelton Co., Birmingham, Conn.
Smith, Thos. Co., Worcester, Mass.
Sternbergh, J. H. & Son, Reading, Pa.

Books.
Williams, David, Company, 232-238 William Street, N. Y.

Box Fixtures.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y

Box Openers.
Maltby-Henley Co., 20 Warren St., N. Y

Box Straps and Corners.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
Quincy Hdw. Mfg. Co., Quincy, Ill.

Boxes, Hdw. Shelf, &c.
Green, A. H. & Co., 22 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va.

Brackets, Shelf.
Atlas Mfg. Co., New Haven, Conn.

Brass and Copper.
Ansonia Brass & Copper Co., N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Davol, John & Sons, 100 John, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N.Y.
Hussey, C. G. & Co., Pittsburgh Pa.
Plume & Atwood Mfg. Co., 29 Murray St., N. Y.
Randolph & Clowes, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y

Brass and Copper Wire.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y

Brass Butt Hinges.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Tiebout, W. & J., 16 & 18 Chambers

Brass Butts.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Founders.
Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co. Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

Brass Goods.
Brass Goods Mfg. Co., 88 Chambers.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
Hungerford U. T., Brass & Copper Co. 121 Worth St., N. Y.

Bridge Builders.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.

Bronze, Manganese.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze (Tobin).
Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y

Brushes and Brooms.
Hendee Wire Brush Co., Milwaukee, Wis
Osborn Mfg. Co., Cleveland, O.

Buckets, Rubber.
Cleveland Galvanizing Wks., Cleveland

Buggies.
Parry Mfg. Co., Indianapolis, Ind.

Builders' Hardware.
Reading Hdw. Co., Reading, Pa.
Stanley Works, New Britain, Conn.
U. S. Steel Lock Co., Clinton, Iowa.

Bulldozers
Williams, White & Co., Moline, Ill.

Burnt Leather.
Ensworth, L. L. & Son, Hartford, Conn.

Butchers' Tools.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
McKinnon Dash Co., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hartley & Graham, 313 & 315 Broadway, New York.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N.Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1131 Broadway, N.Y
Enterprise Foundry Co., Cincinnati, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McNeal Pipe & Foundry Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry Co., Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

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Castings, Steel.
Arcade Malleable Iron Co., Worcester, Mass.
Birmingham Iron Foundry, Birmingham, Conn.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore, Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cements.
Warner, Chas. Co., Bunnington, Del.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co., Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth st., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co., Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whitton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Collapsible Tubes.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Commercial Literature.
Maule, Francis L., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood, Mass.

Cork Screws.
Clough, Rockwell, Keene, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corn Huskers.
Milwaukee Hay Tool Co., Milwaukee, Wis.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings.
Bennett Geo. H. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Byram & Co., Detroit, Mich.
Whiting Foundry Equipment Co., Chicago, Ill.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston,
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.

Dampers.
Williams, A. C., Ravenna, O.

Dashes and Fenders.
McKinnon Dash Co., Buffalo, N. Y.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Decorated Tin Goods.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Hay-Budden Mfg Co., Brooklyn N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh
Wilson & Smith, Worcester, Mass.

Display Doors.
Dempsey Mfg. Co., Cleveland, O.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Norton Door Check & Spring Co., Boston.
Pullman Cash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Bausch & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tiffin, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co. Hartford, Ct.
Stover Novelty Works, Freeport, Ill.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Canton E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia, R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Stiles, E. S. Press Co., Watertown, N. Y.
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J., Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass
Taplin Mfg. Co., Forestville, Conn.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamont, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa.
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
New Castle Engineering Works, Pittsburgh, Pa.
Sagendorph, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Watertown, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Palmer, Bros., Mianus, Conn.
Thompson, J. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Westinghouse Machine Co., Pittsburgh, Pa.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Toledo William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fence Ratchets.
Bowen Cable Stay Fence Co., Norwalk, O.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilgore Wire Mfg. Co., Chicago, Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.
Union Fence Co., De Kalb, Ill.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
McLain, E. S. & Son, Pittsburg, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Foot Warmers.
Chicago Foot Warmer Co., Chicago, Ill.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hayden-Dudden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fruit Jar Trimmings.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, R. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M., Oxford, Ct.
Gould & Eberhardt, Newark, N. J.
Whitton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

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Glue.
Sadder, Adamson & Co., Phila., Pa.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Grindstone Hangers.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, L. E., Middletown, Conn

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 543-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Parker, Chas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Carrier .
Milwaukee Hay Tool Co., Milwaukee, Wis.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Milwaukee Hay Tool Co., Milwaukee, Wis.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 10 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 240 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Speidel, J. C., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Menders.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Dishes.
Clad, V. & Sons, Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Graham, John H. & Co., 113 Chambers St., N. Y.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Kynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lueneburg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila., Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O

Job Lots, Hardware.
Browne & Mansfield, 245 Broadway, N. Y.
Chicago House Wrecking Co., Chicago Ill.

Joist Hanger.
Van Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Keys.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio
Phila Lawn Mower Co., Phila., Pa.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Reading Hdw. Co., Reading, Pa.
U. S. Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Barsh & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Farrel Foundry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Pouliterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Knives.
Loyd, John, 558-562 Water St., N. Y.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Mfrs. F. S., Phila., Pa.
Phila. Machine Screw Wks., Phila., Pa.
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Machines.
Adams Co., Dubuque Iowa.
Becker, John, Mfg. Co., Fitchburg Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gem, Philadelphia Pa.
Niles Tool Works, Hamilton, O.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & Klag Perforating Co., Chicago Ill.
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Nail Machinery.
Atherton, Jesse, Auburn, R. I.
Crescent Mfg. Co. B Beville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Maltby-Stanley Co., 20 Warren St., N. Y.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Fiskdale, Mass.

Nails Cut and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. *(See Stoves, Oil, Vapor and Gasoline.)*

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

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Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Johns, H. W. Mfg. Co., 100 William St. N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Niles Tool Works, Hamilton, O.
Stanley Rule & Level Co., N.Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore,
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scholl horn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Post Hole Diggers.
Iwan Bros., 8 Beaver, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland,
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws.
Stover Novelty Works, Freeport, Ill.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dieneit & Eisenhardt, Philadelphia.
Dumont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Stiles, E. S. Press Co., Watertown, N. Y.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T Mfg. Co., Hamden, Conn

Pullers.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.

Pump Buckets.
Fresnour, H. C., Chicago, Ill.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphreys Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.

Punches, Conductors.
Woolman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
Mersick, C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles, E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works, Scranton, Pa.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Woostec Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reducing Valves.
D'Este & Seeley Co., Boston, Mass.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg. Co., Fond du Lac, Wis
Mackinaw Refrigerator Co., 106 Chambers St., N. Y.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-3. Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Hartley & Graham, 313-315 B'way, N.Y.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Hartley & Graham 313-315 B'way, N. Y.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jones & Laughlins, Ltd. Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Garrard Fdry. & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper
Thompson, Hugh L., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Birmingham Iron Foundry, Birmingham, Conn.
Booth, The Lloyd Co., Youngstown, O.
Garrard Fdry. & Mch. Co., Ansonia Conn
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown, O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton N. Y.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.
Ward & Nash, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 63 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Farmingham, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.
Enterprise Foundry Co., Cincinnati, O.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
American Cutlery Co., Chicago, Ill.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Peerless Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Butler, C., Hoboken, N. J.
Grant, Robt. & Co., 53 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Ed'r & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screw Plates.
Fairbanks Co. 311 B'way, N. Y.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket,
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 95 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co., Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phoenix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaping Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Pottor & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Sproat, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Mabratt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

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Ship Chandlery.
Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.
Stamping Co., Cleveland, Ohio.
Shovel Co., St. Louis, Mo.

Sieves.
Edw. & Sons, Philadelphia, Pa.

Sinks.
Jacobs Mfg.Co., Columbus,O.

Skates, Ice.
Stoddard & Kendall, Boston, Mass.
Saml. Skate Mfg. Co., Worcester, Mass.

Slaw Cutters.
Henry & Sons, Philadelphia, Pa.

Smelting Works.
Paul S., 700 S. Broad, Phila.

Soapstone Goods.
Mfg. Co., Pike Station, N. H.

Solder.
Lead Work , St. Louis, Mo.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co. Jersey City, N. J.

Spark Guards.
Kelsey Wire Works Co., 95 Fulton, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N. Y.

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kelp, O. H., Marietta, Pa
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace bros., Wallingford, Conn.

Sporting Goods.
Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 314-316 B'way, N. Y

Sprayers.
Eureka Co., Rock Falls, Ill.

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Connar Bros., Bristol, Conn.
Lord Bros Mfg Co., Tilton N. H
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Smith Machine Co., Montpelier, Vt.
Steel Chas. Spring Co., Phila., Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Elliptic Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Kent & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids Mich
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dieneit & Eisenhardt, Philadelphia.
Dodgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Deane & Seeley Co., Boston, Mass.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Deane & Seeley Co., Boston, Mass.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.
Schmelt, Geo. B. Co., Youngstown, Ohio.

Steam Traps.
Deane & Seeley Co., Boston, Mass.
Kelson Evans Mfg. Co., Philadelphia, Pa

Steel Buildings.
Boston Bridge Works, Boston, Mass.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Jamison, Geo., Catasauqua, Pa.
Schmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
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Washburn & Moen Mfg. Co., Worcester

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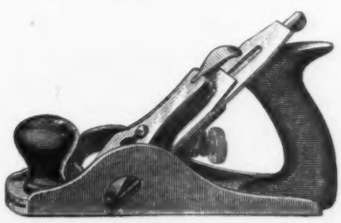

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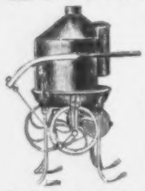
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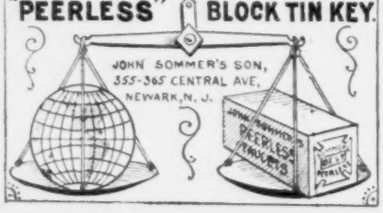

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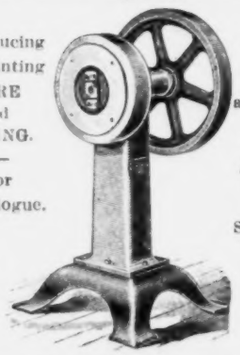
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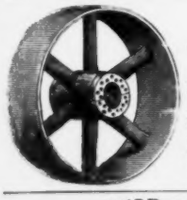

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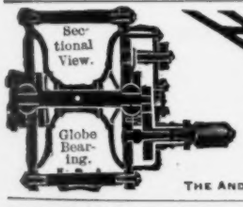

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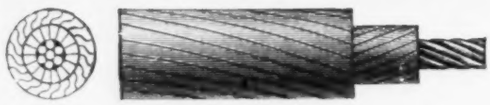

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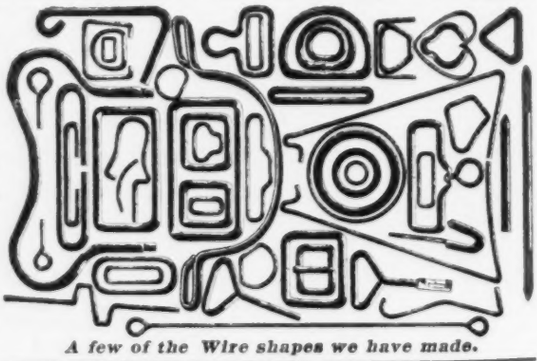

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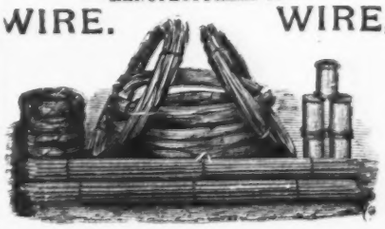

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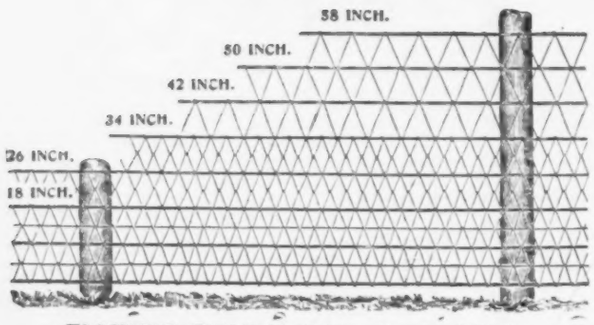

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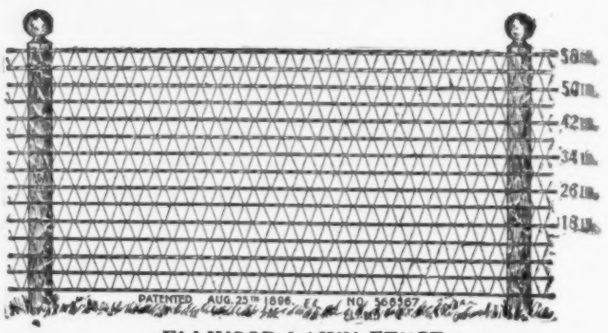

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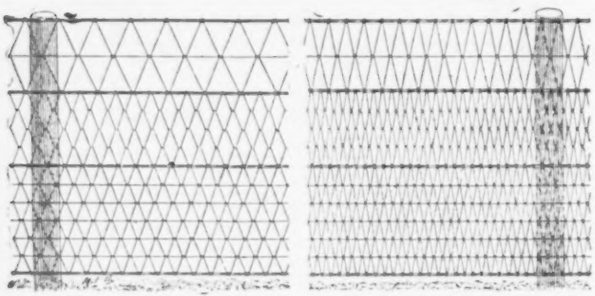

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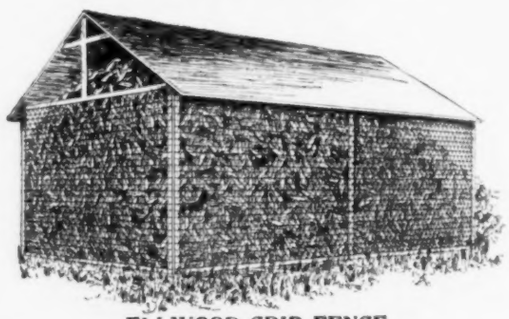

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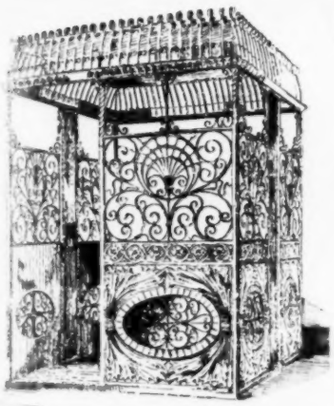

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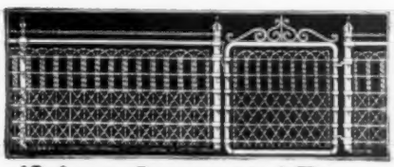

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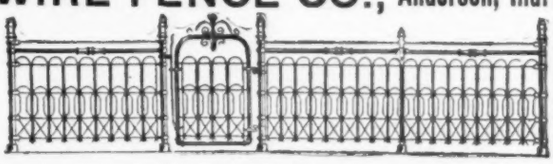

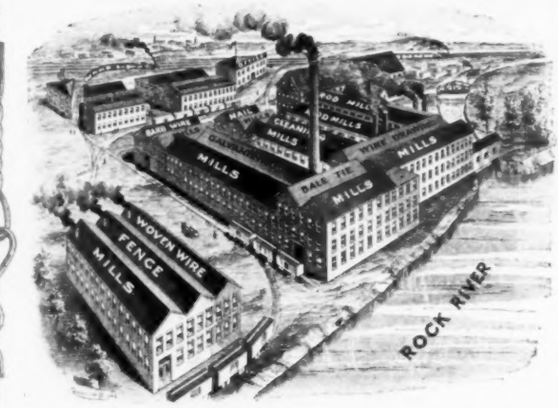

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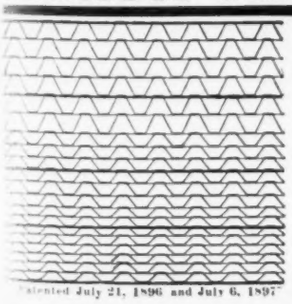

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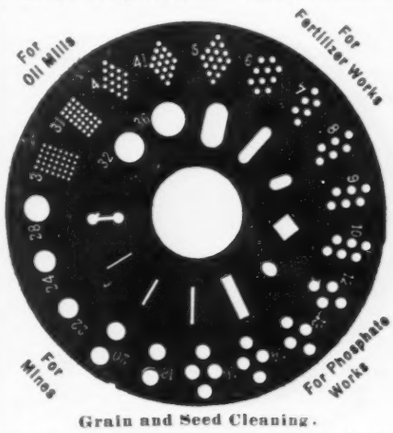

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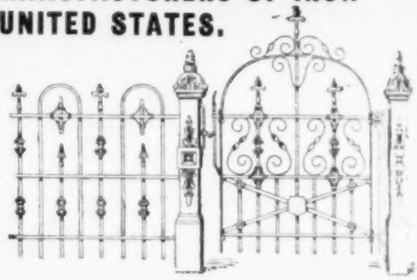

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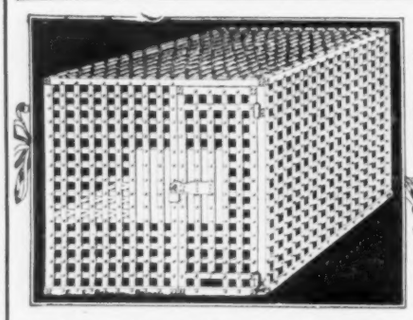

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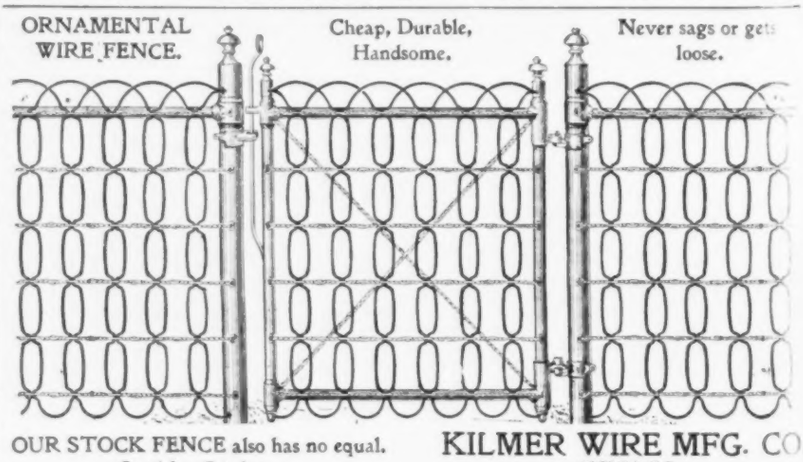

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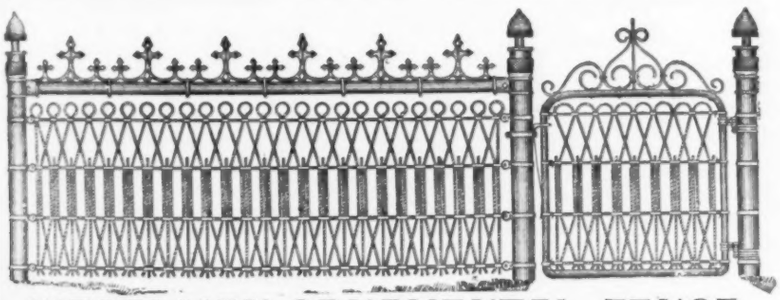

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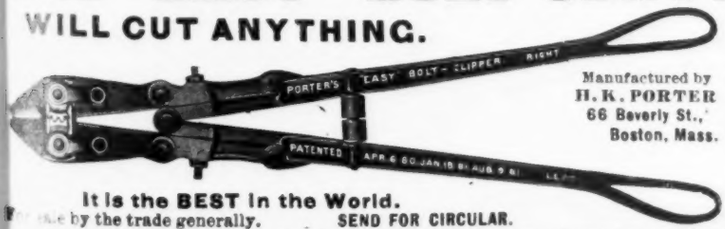

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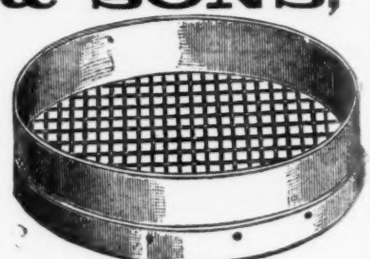

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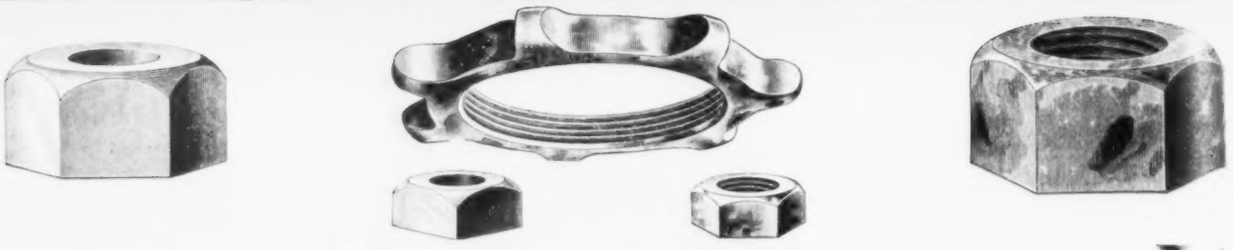

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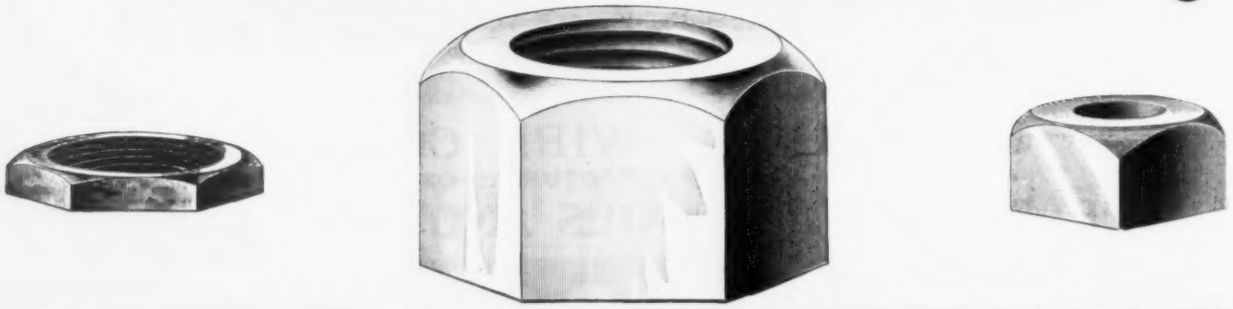

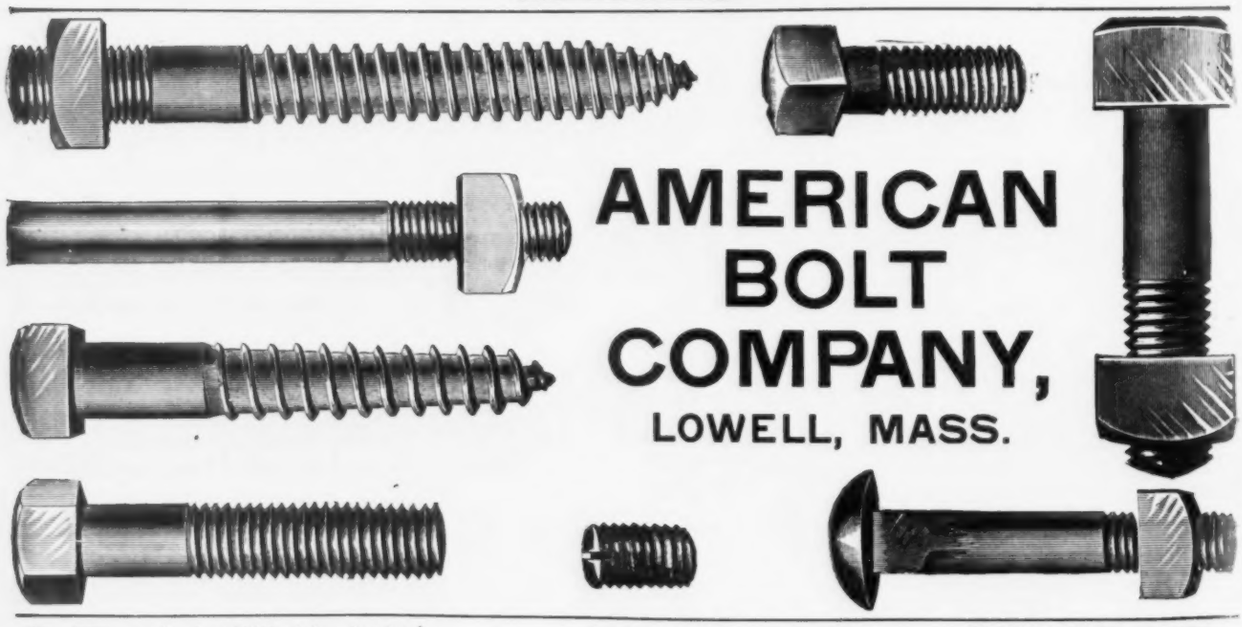

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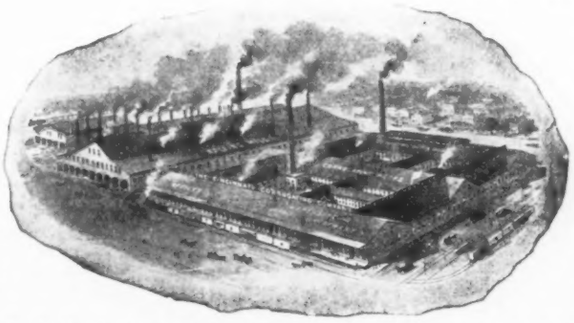

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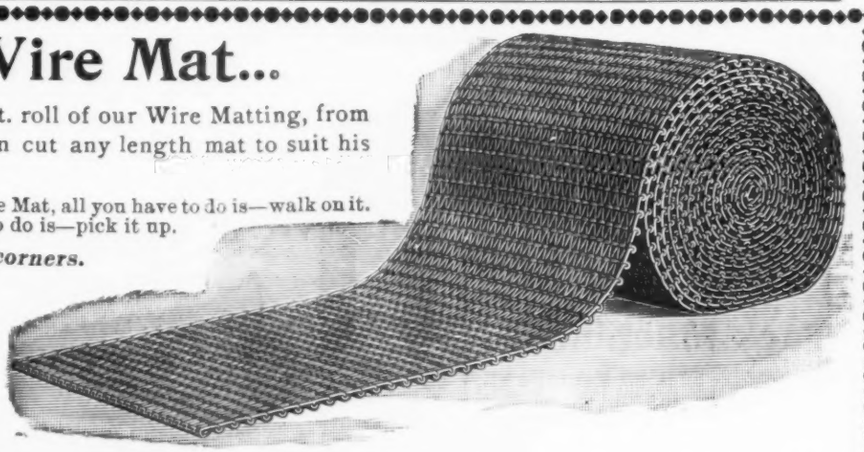

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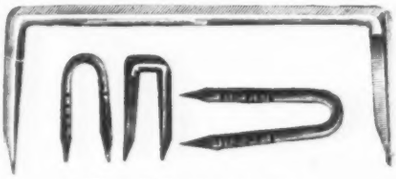

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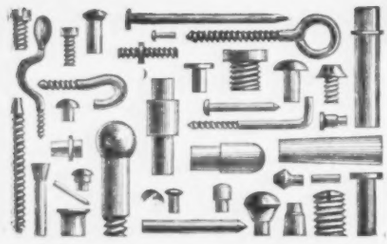

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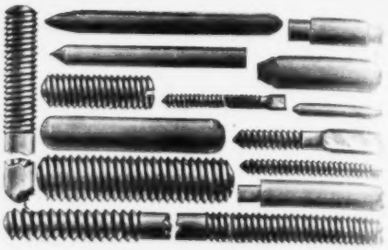

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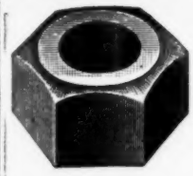

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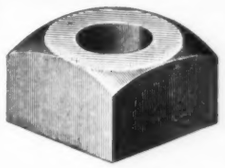

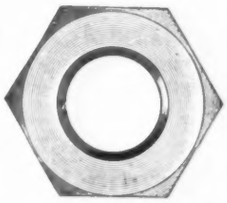

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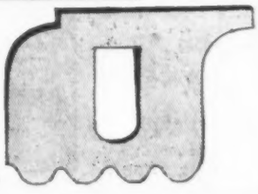

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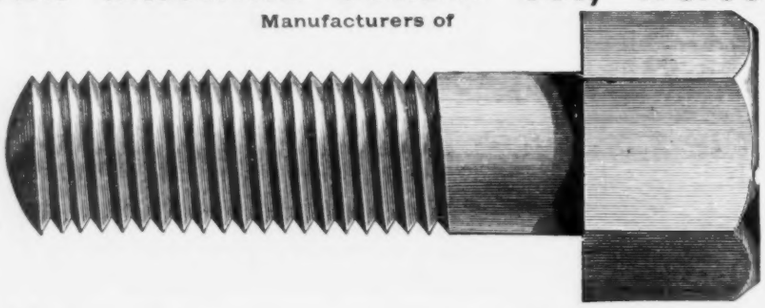

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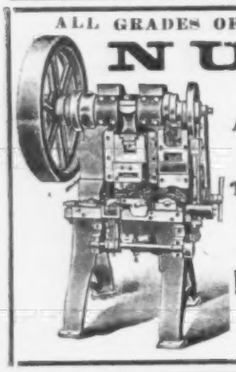

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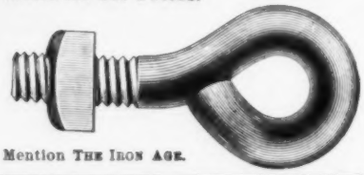

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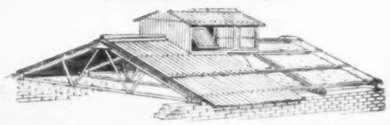

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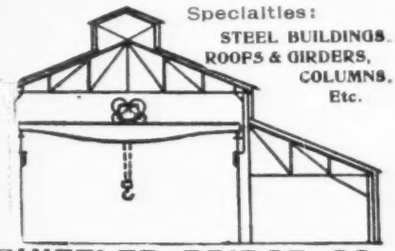

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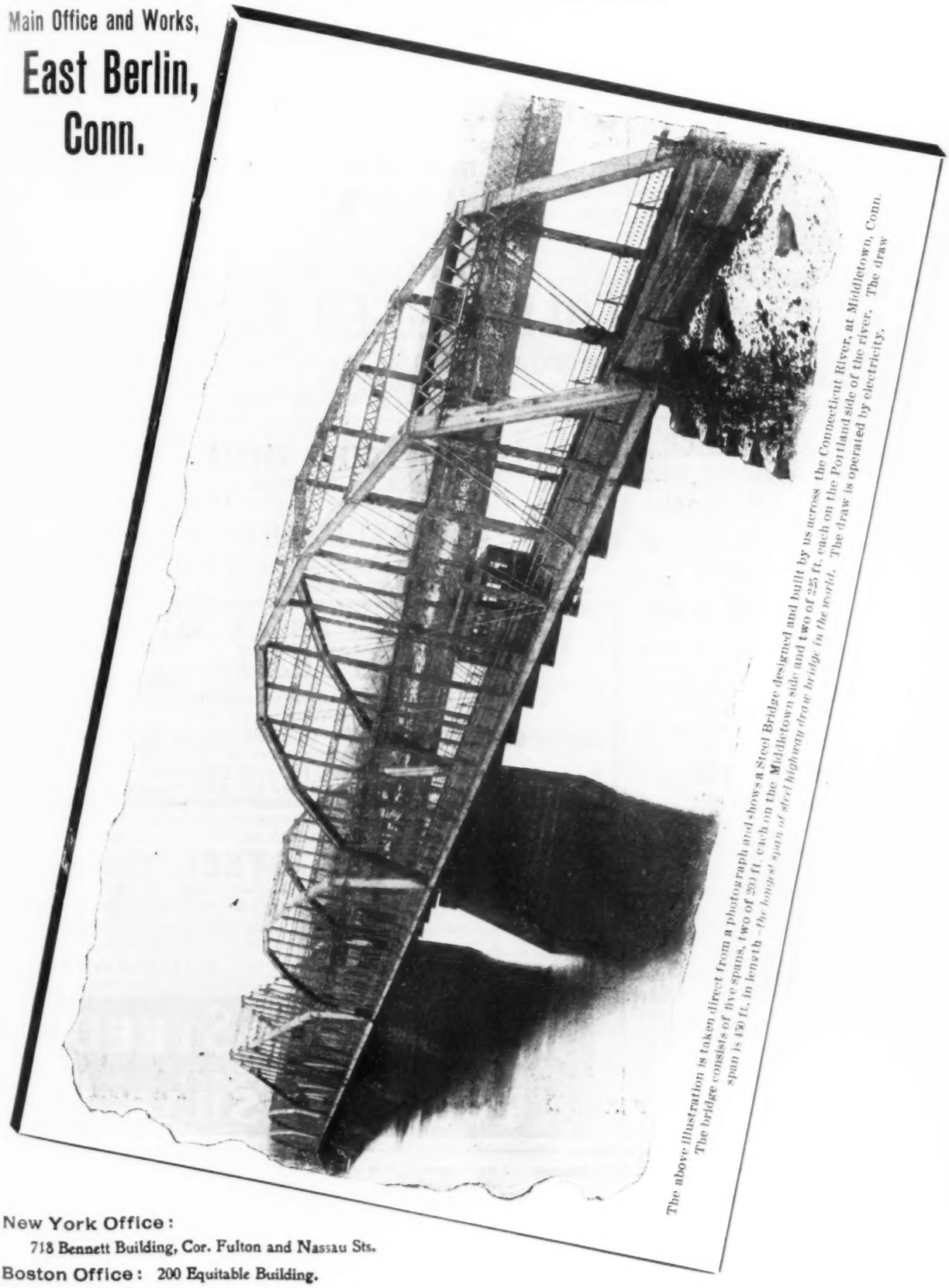

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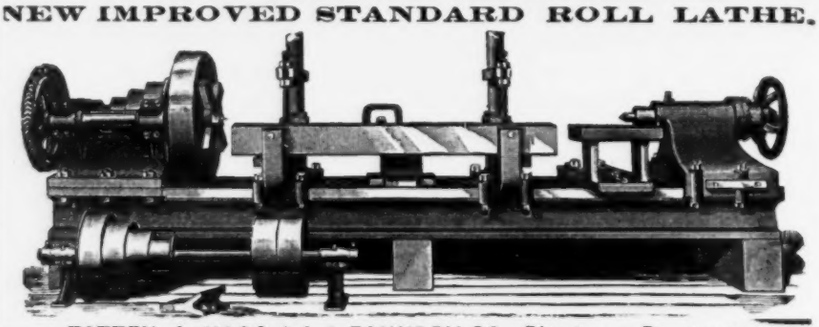

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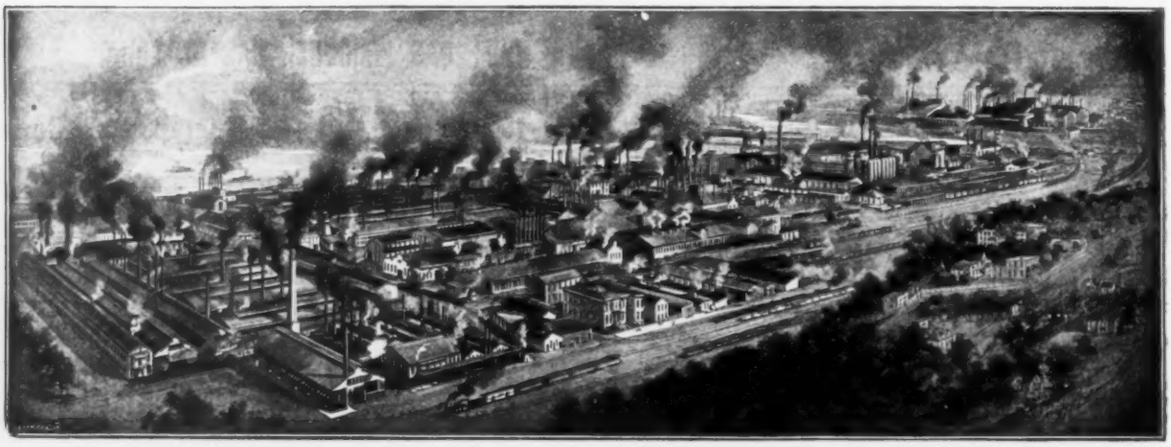

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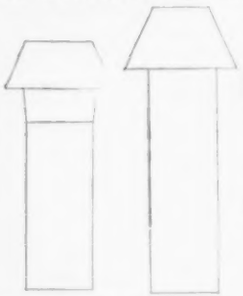

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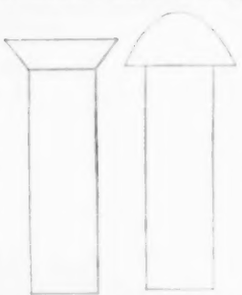

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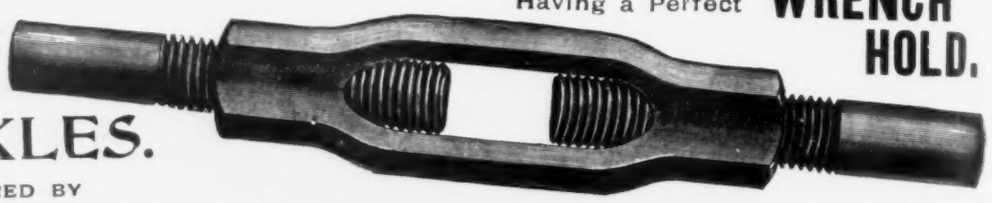

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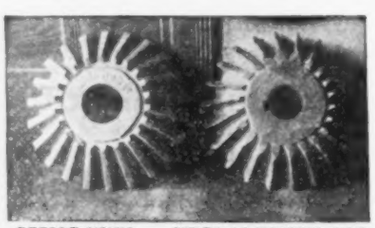

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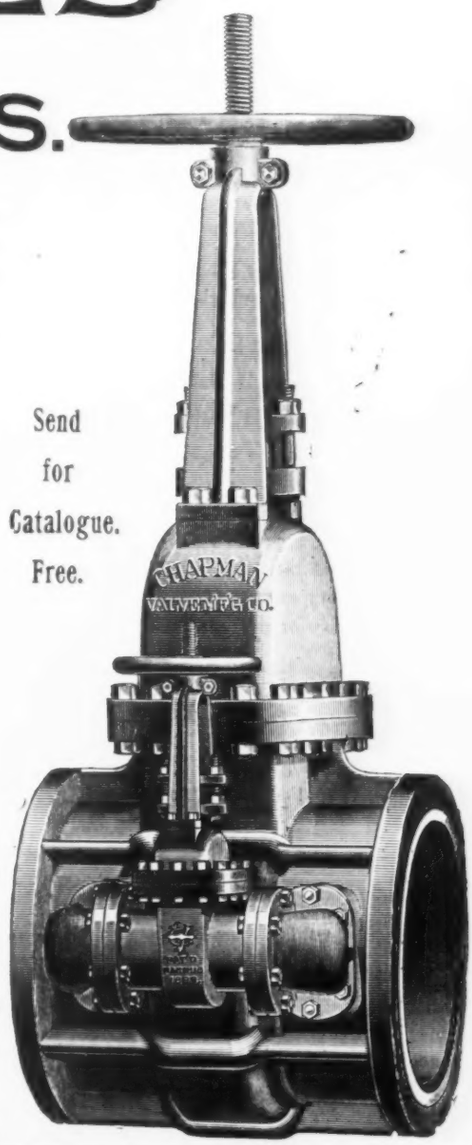

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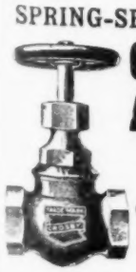

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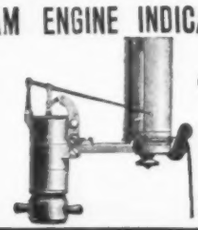

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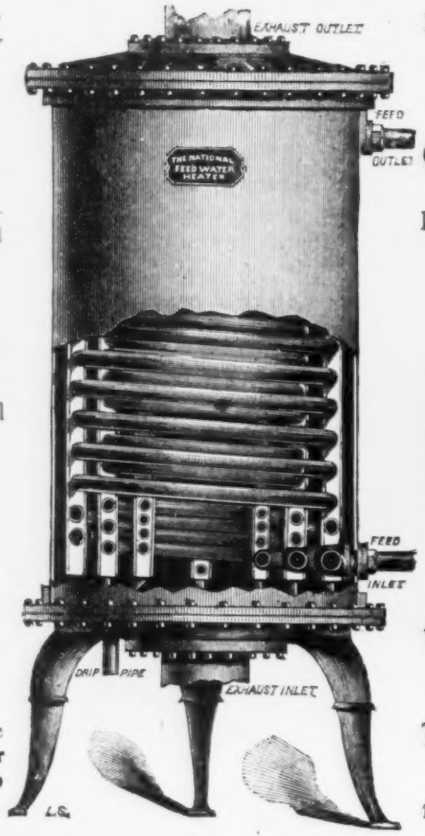

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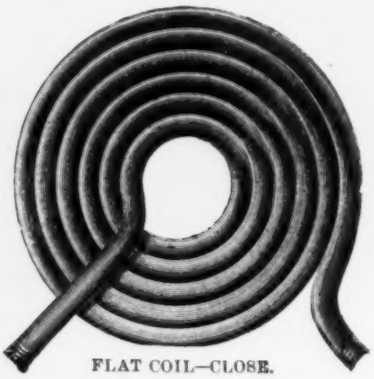

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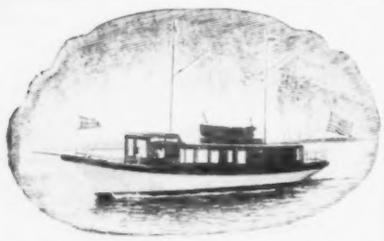

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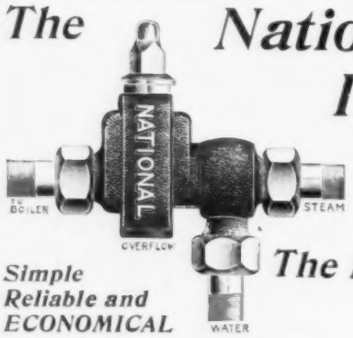

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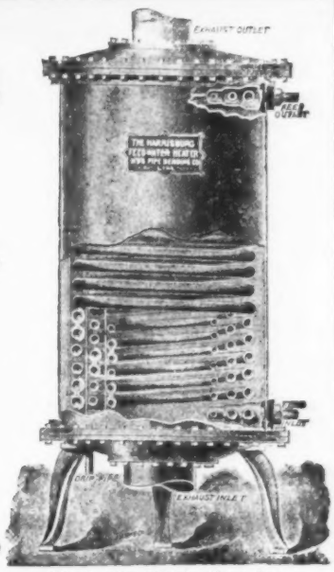

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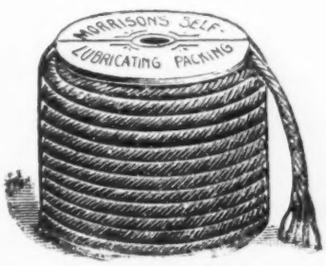

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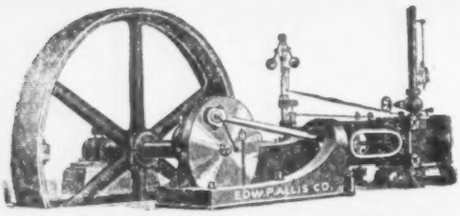

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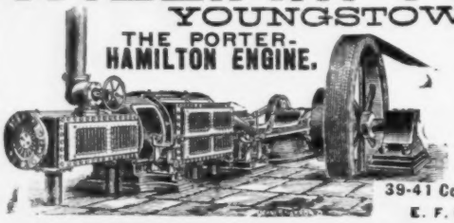

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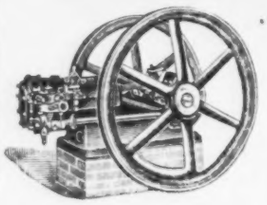

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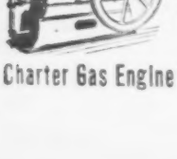

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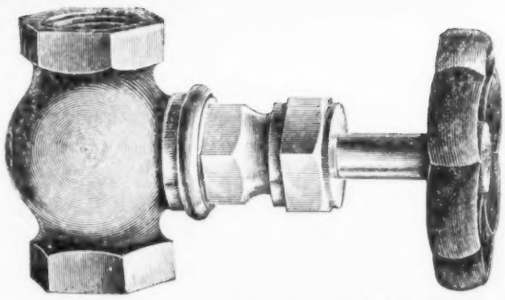

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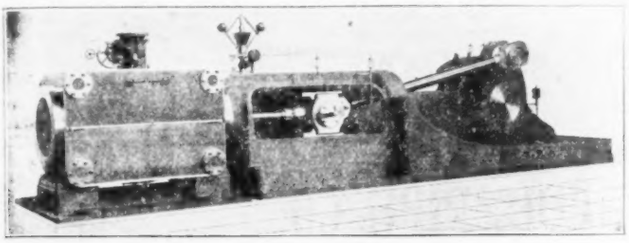

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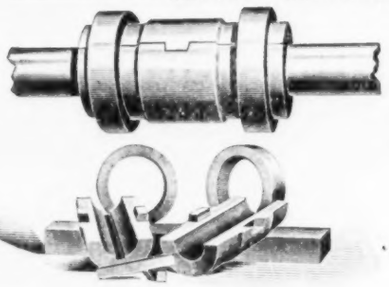

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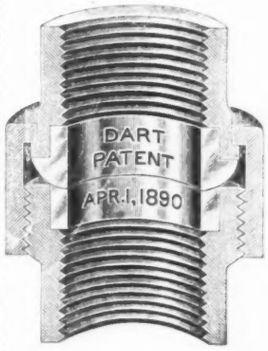

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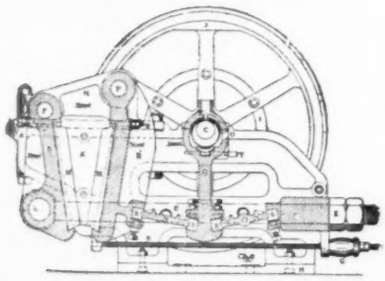

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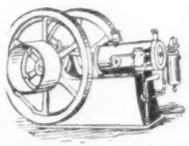

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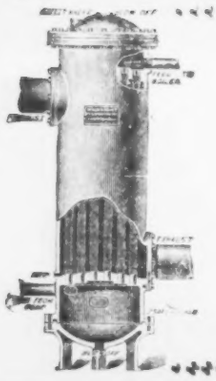

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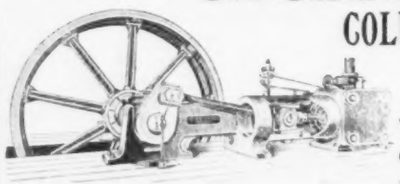

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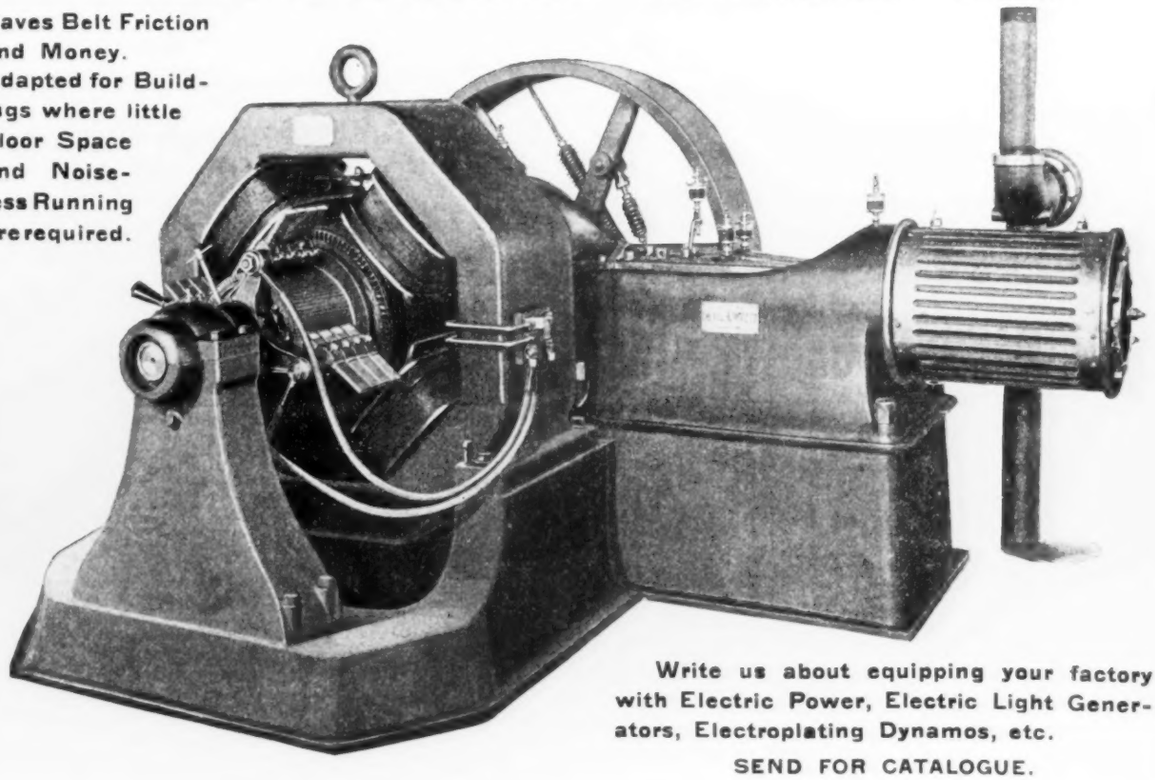

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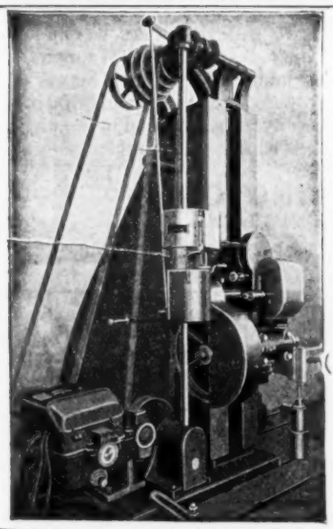

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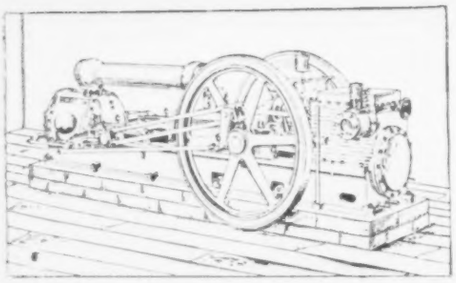

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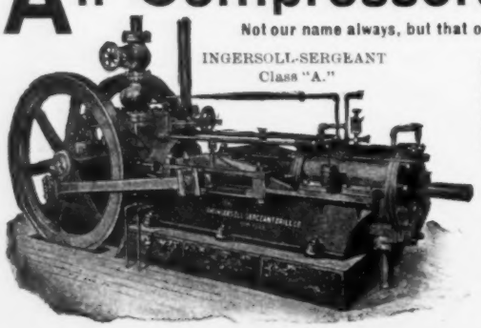

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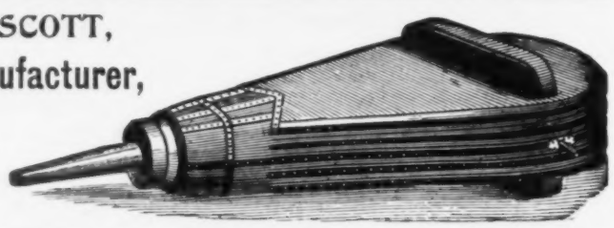

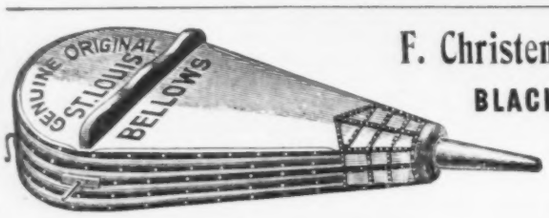

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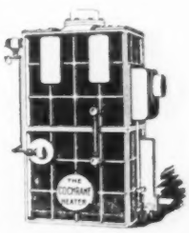

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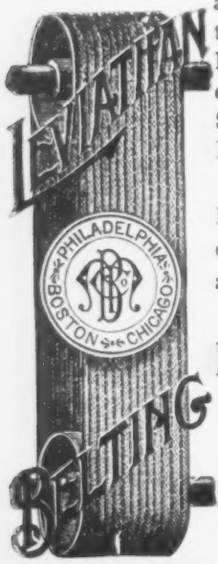

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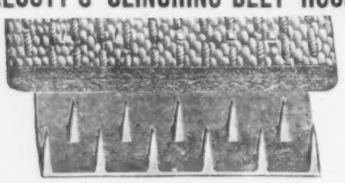

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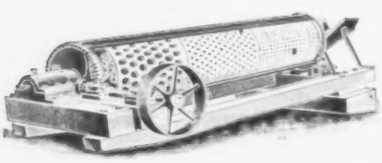

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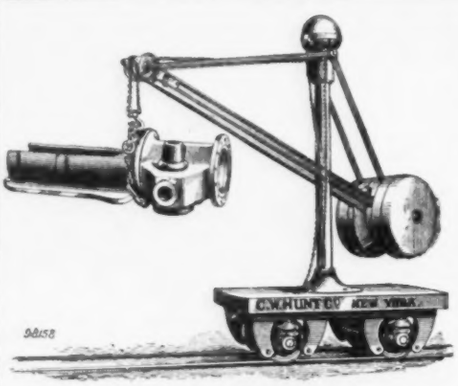

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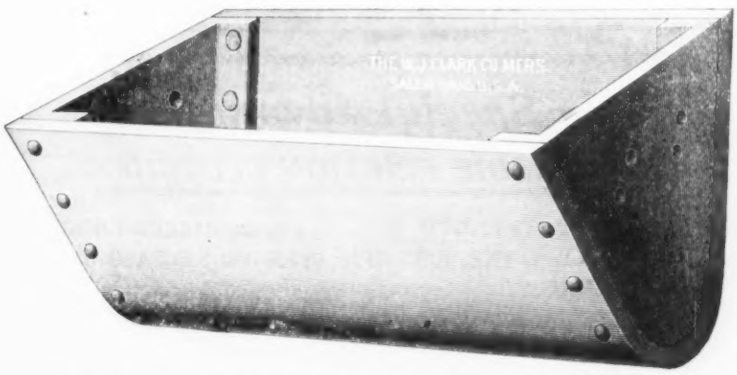

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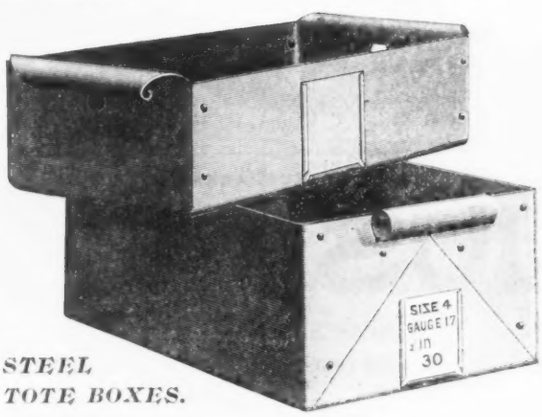

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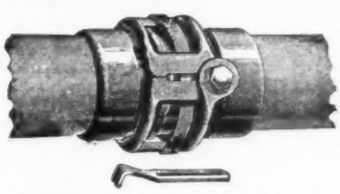

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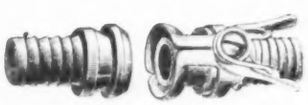

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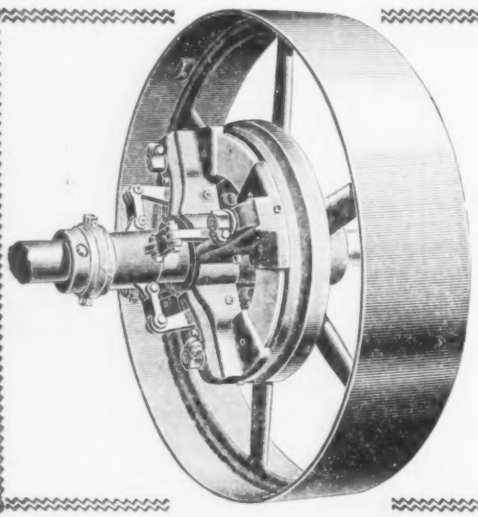

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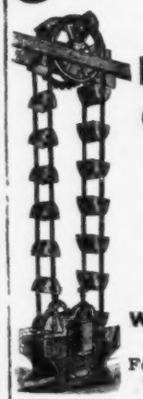

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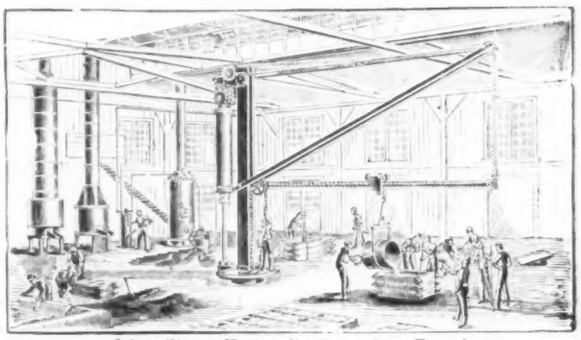
X. Y. DASH, Pres.



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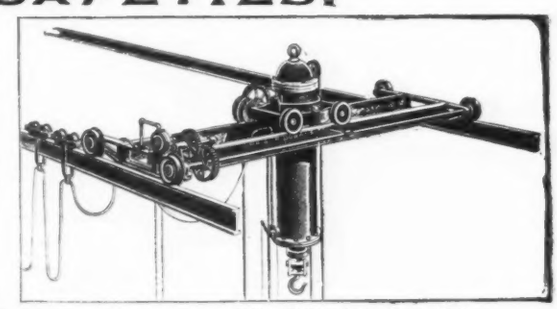

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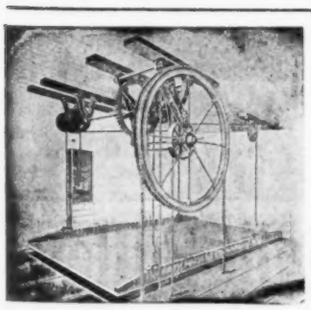

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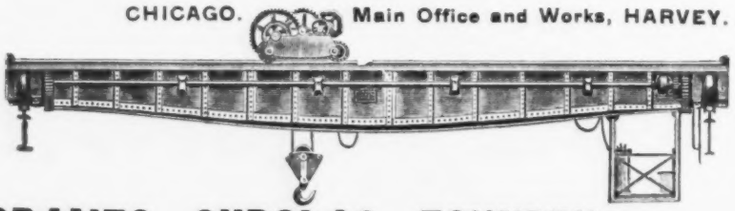

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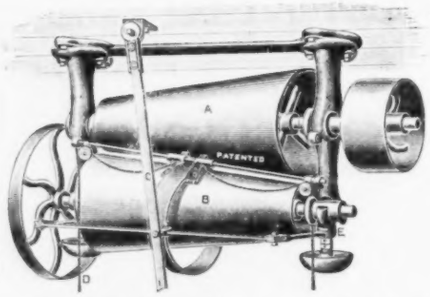

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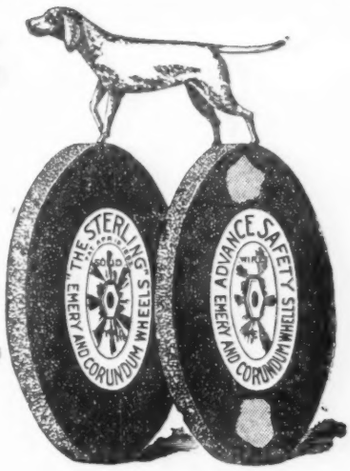

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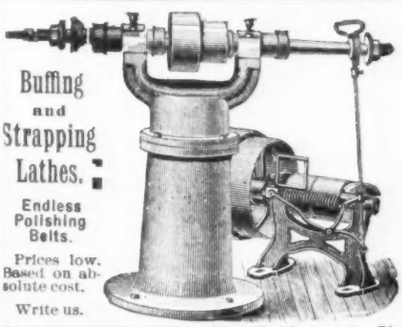

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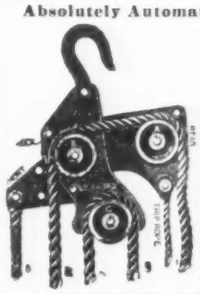

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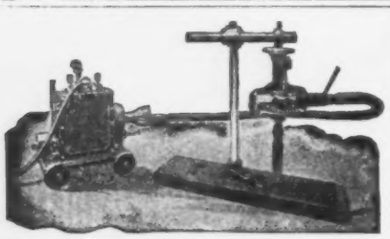

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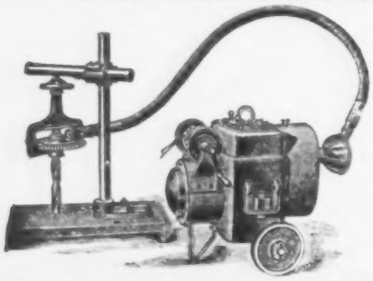

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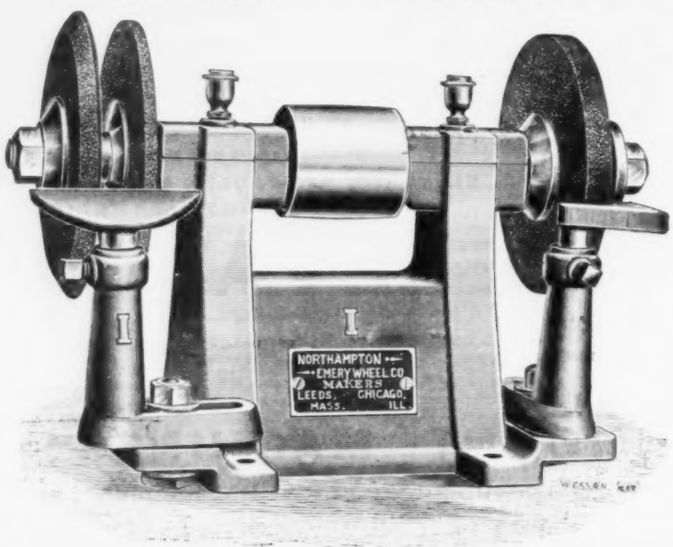

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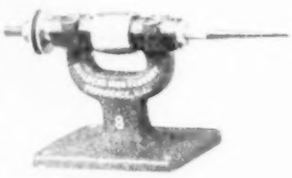

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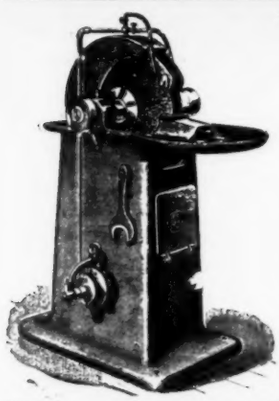

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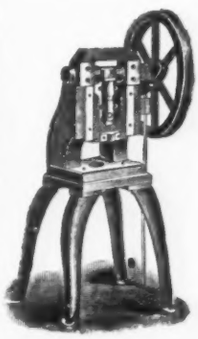

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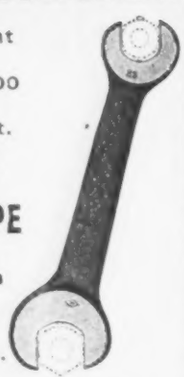

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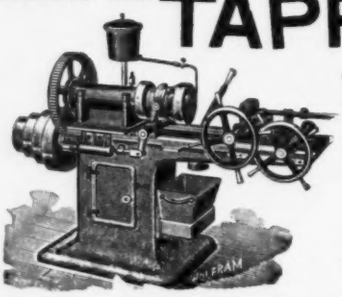

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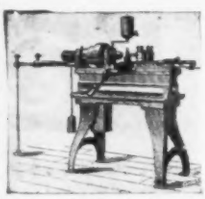

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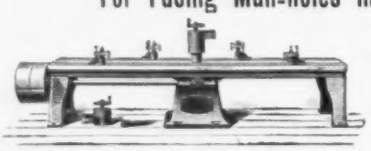

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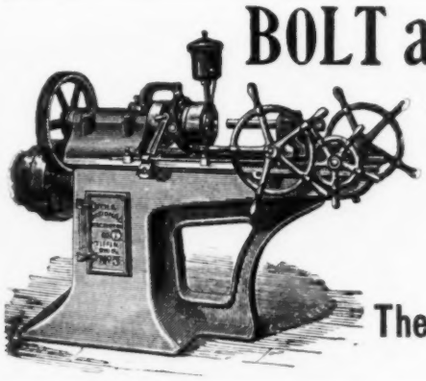

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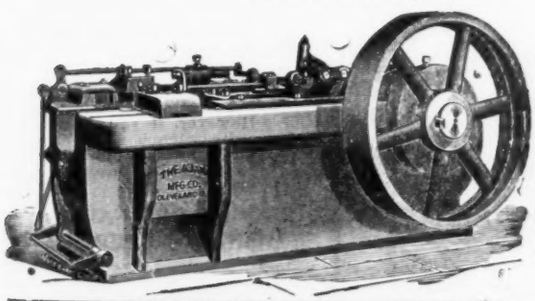

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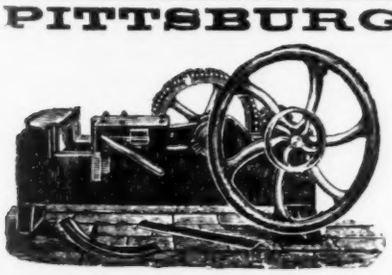

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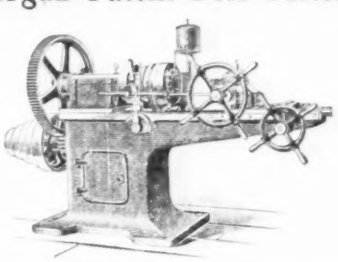

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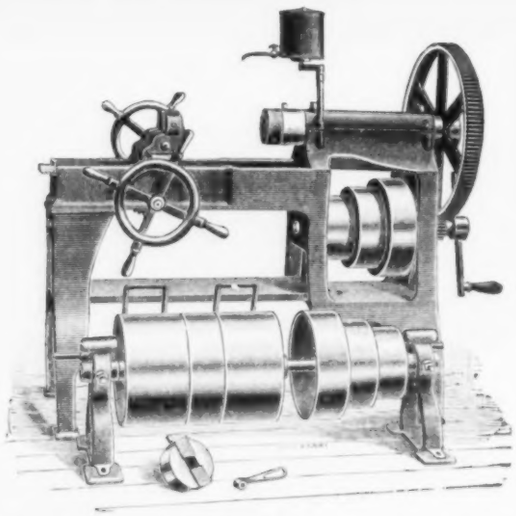

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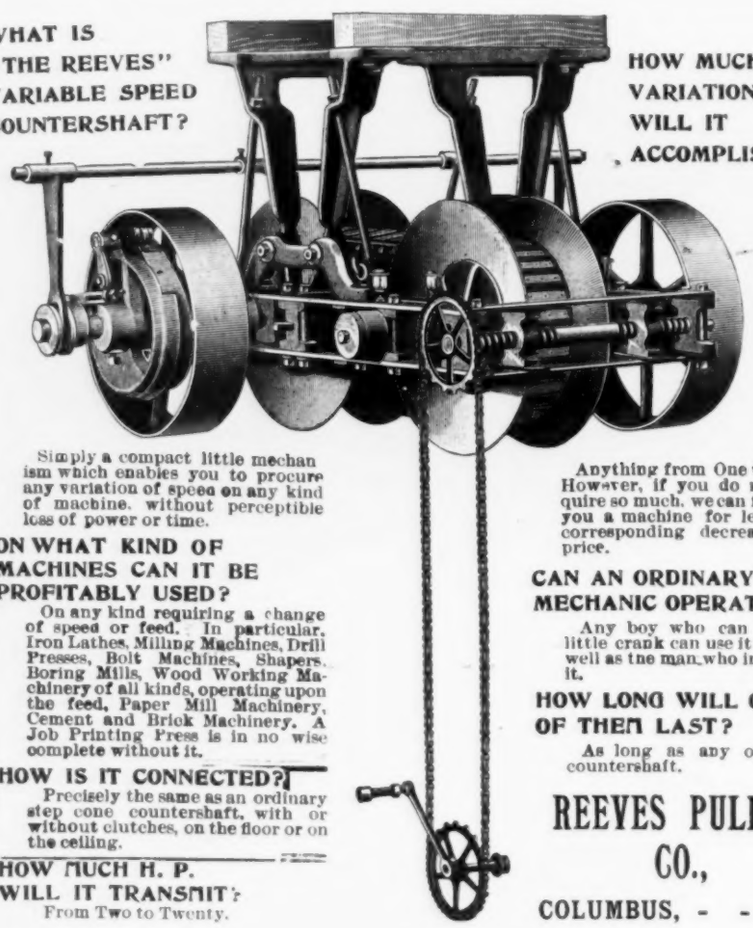

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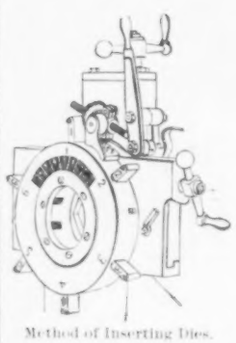

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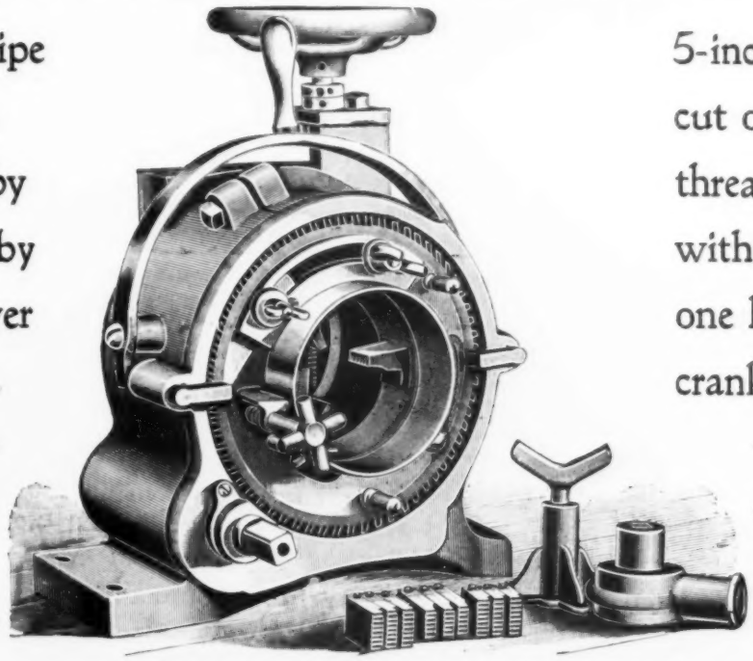

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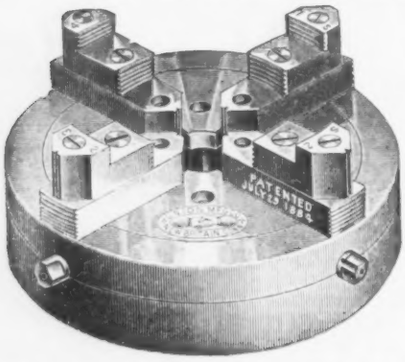

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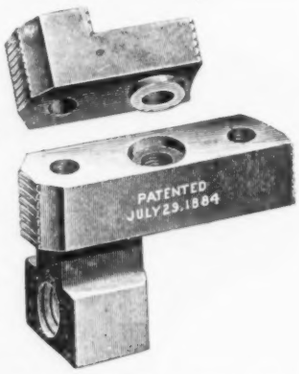

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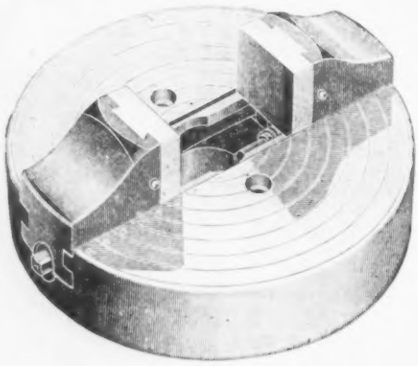

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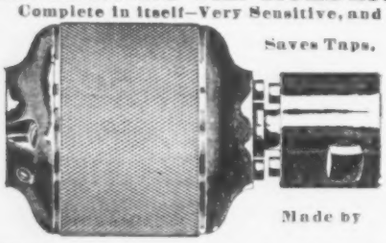

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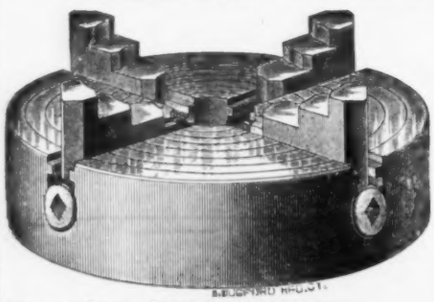

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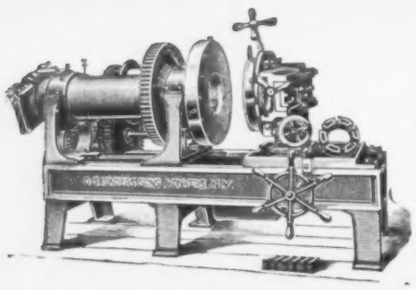

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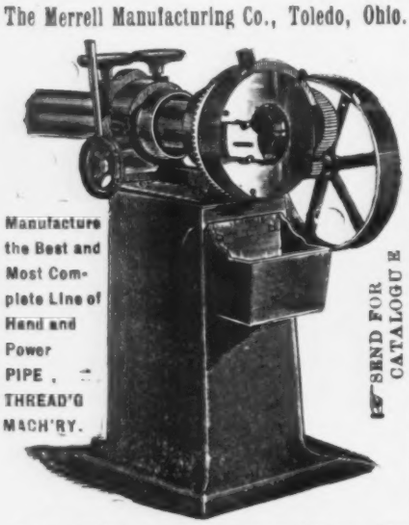

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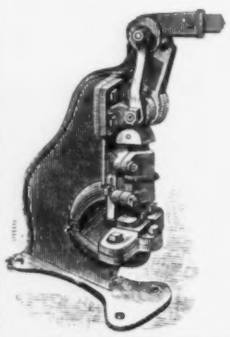

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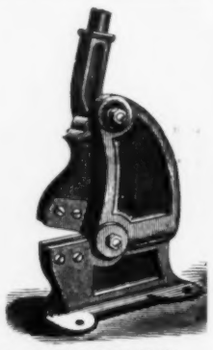

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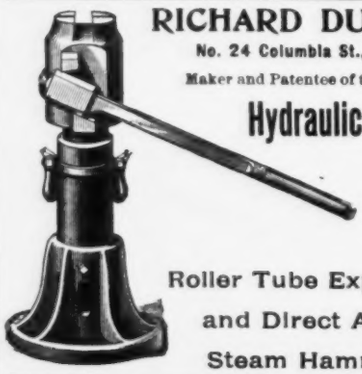

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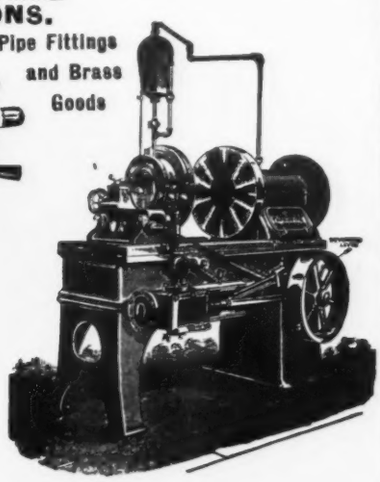

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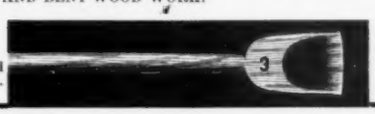

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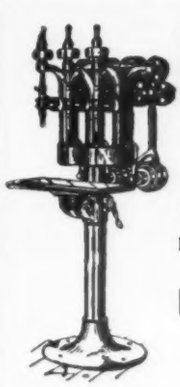

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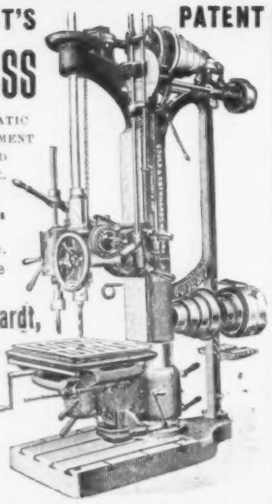

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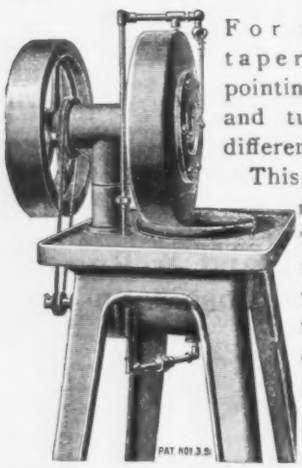

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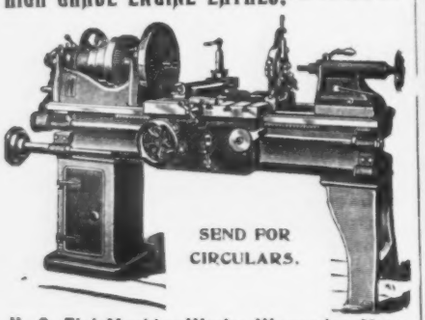

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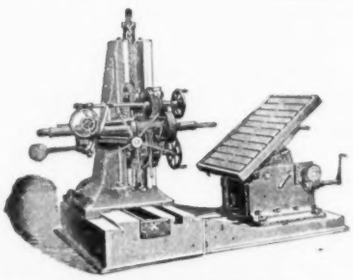

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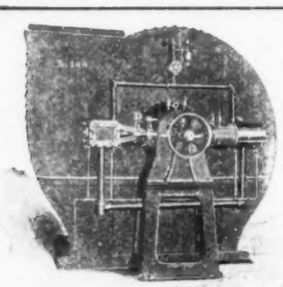

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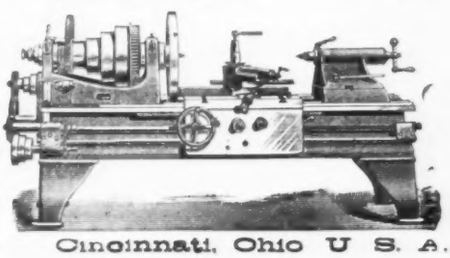

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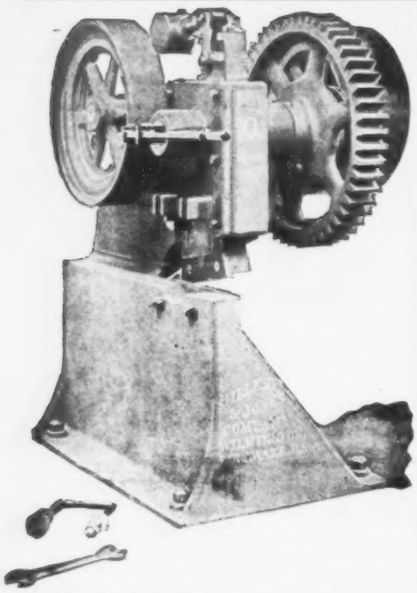

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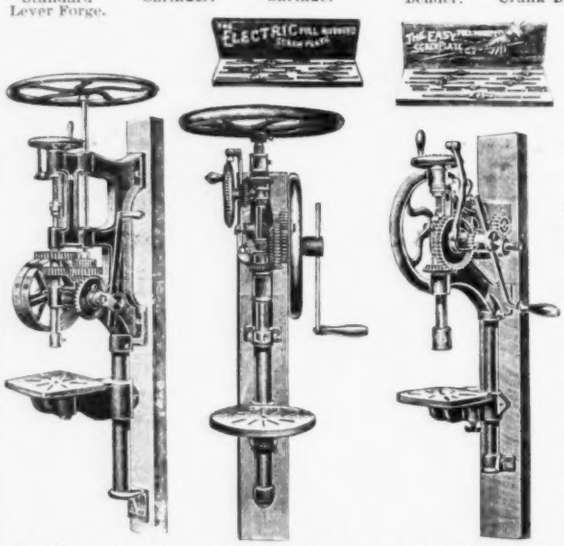

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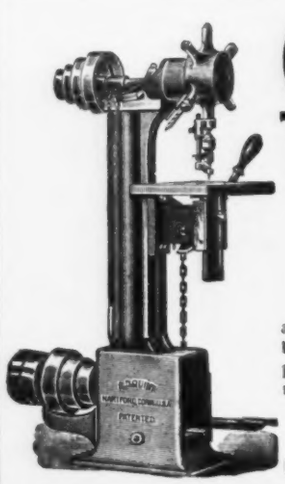

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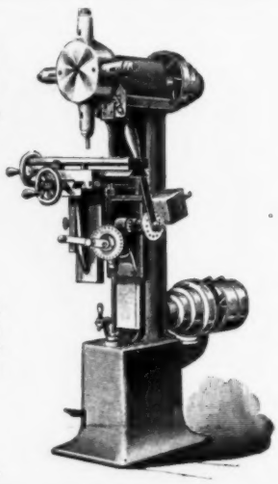

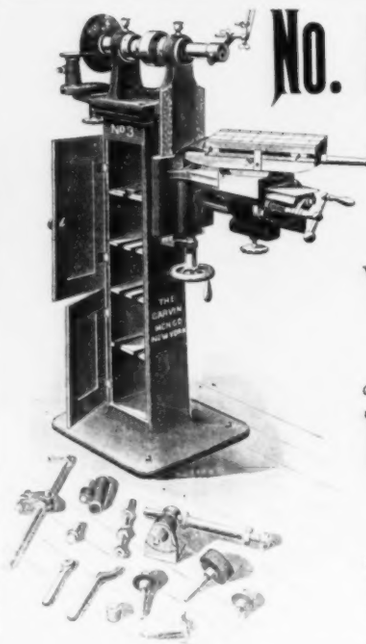

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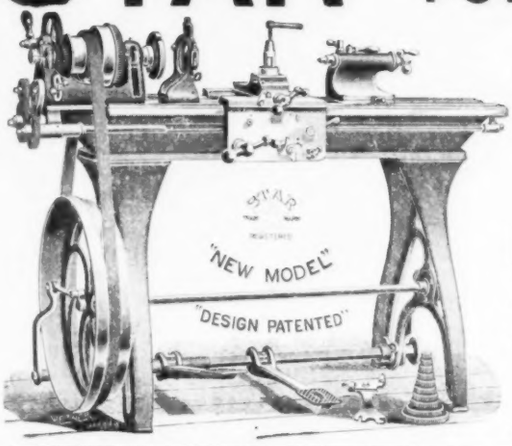

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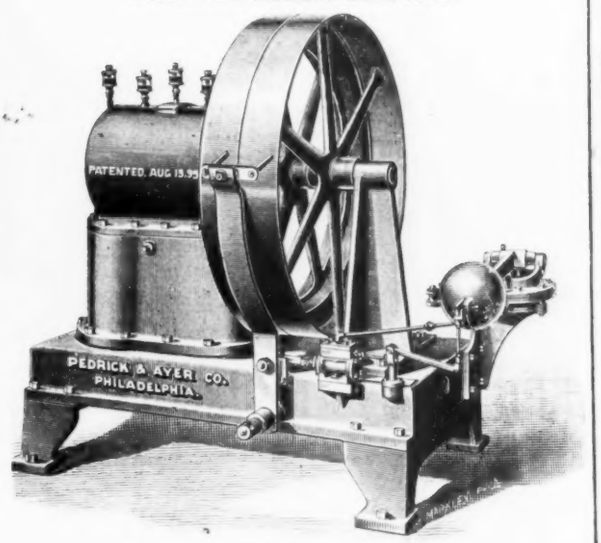

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For ½ inch, ¾ inch and 1 inch Hose.

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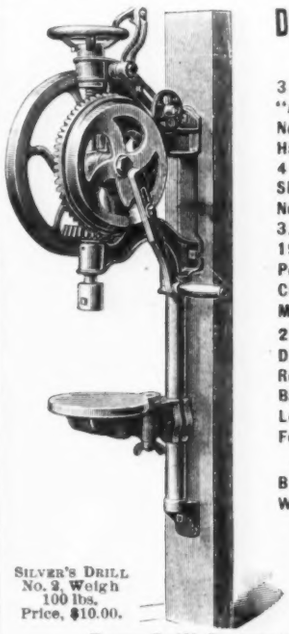

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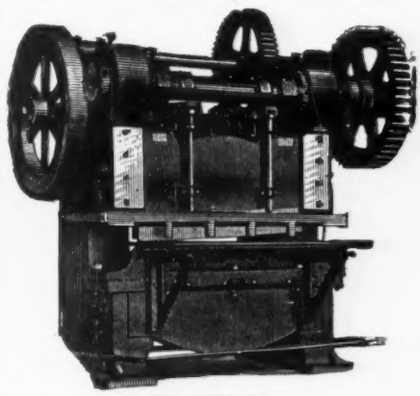

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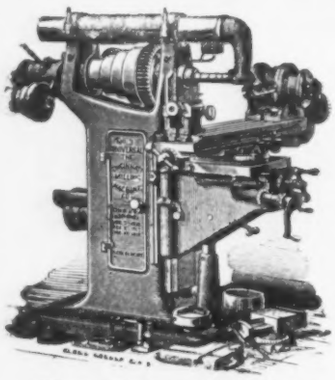

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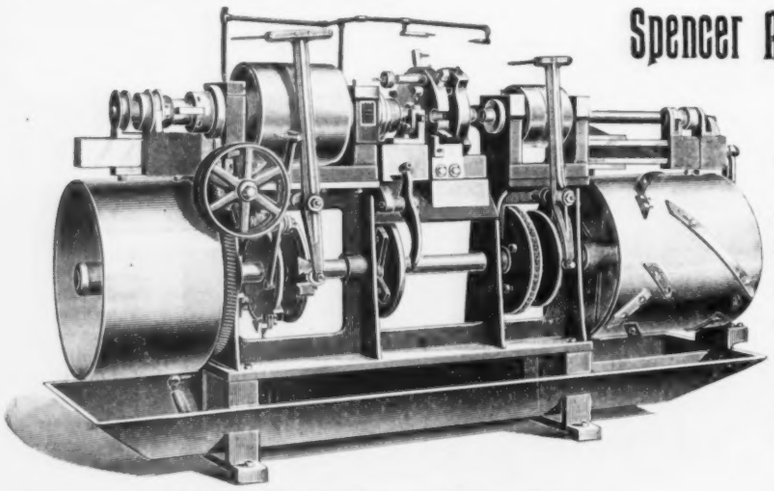

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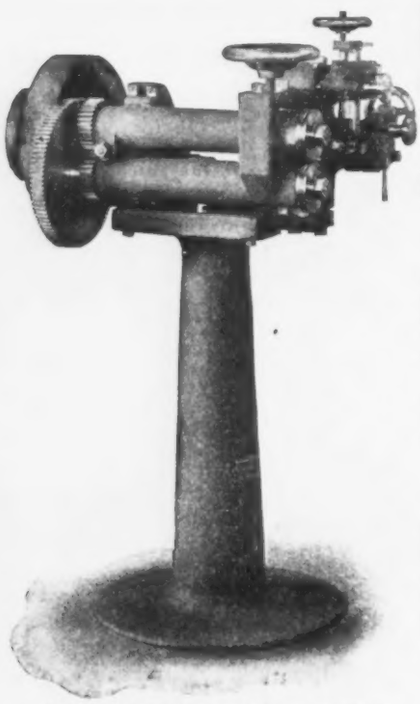

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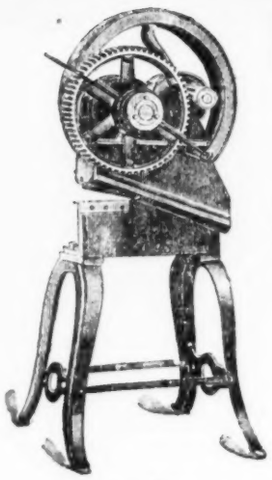

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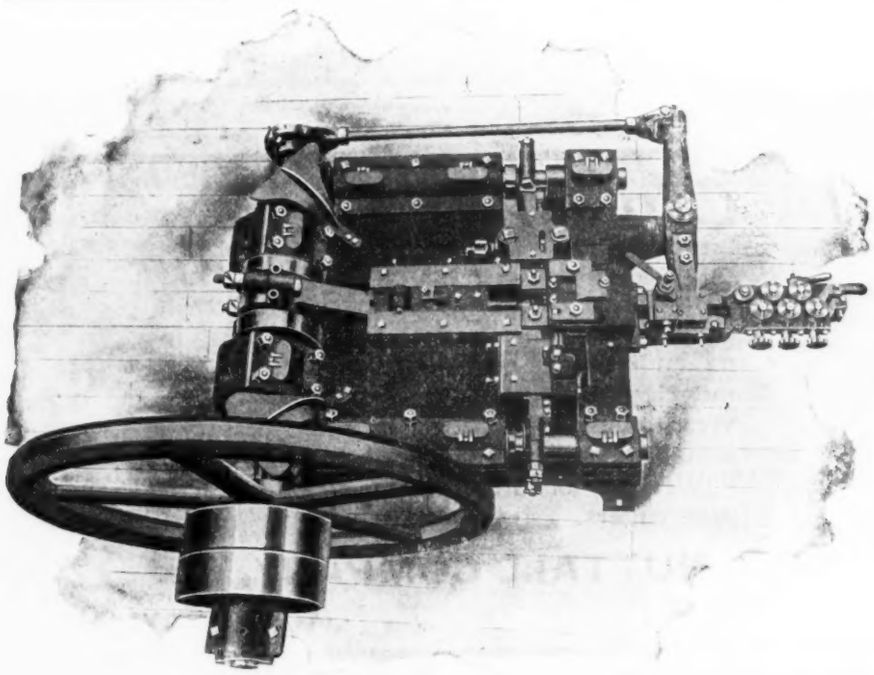

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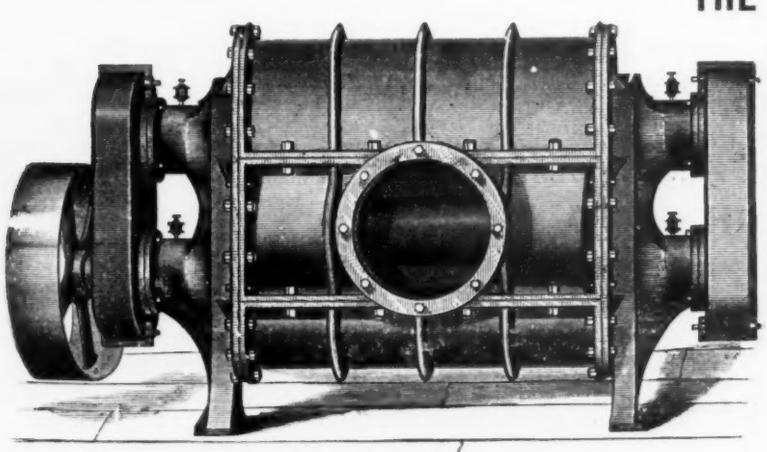

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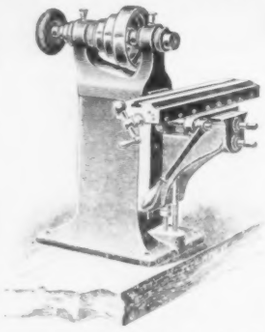

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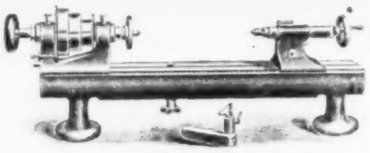

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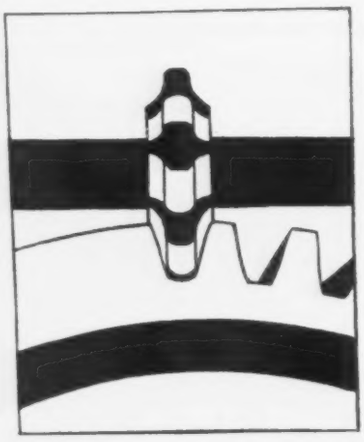

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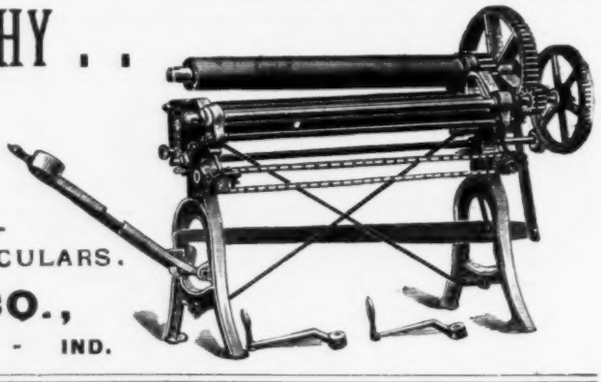

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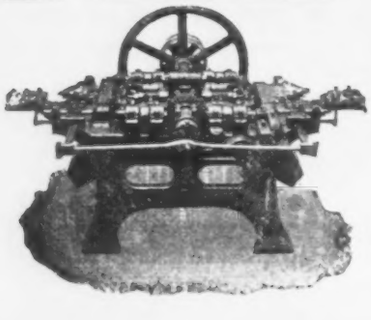

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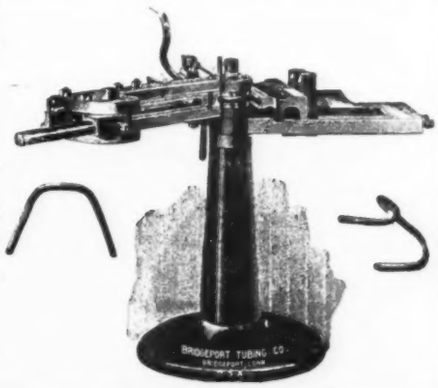

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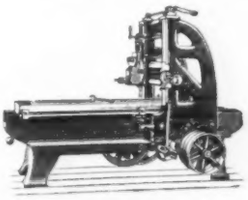

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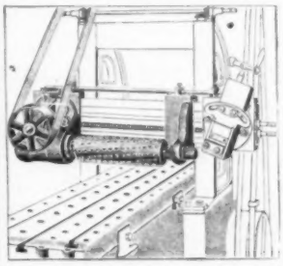

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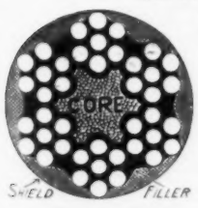

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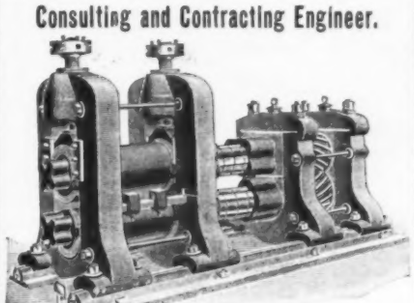

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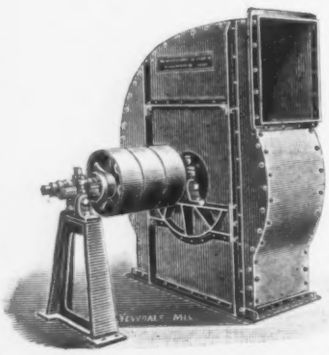

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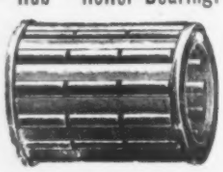

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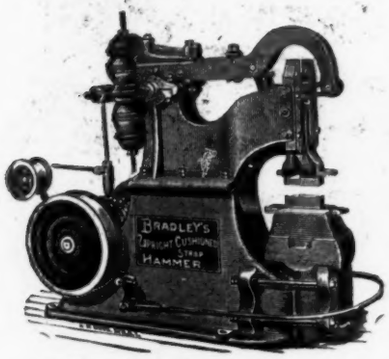

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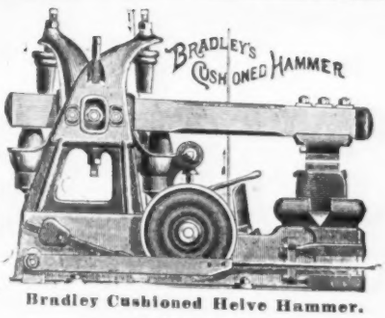

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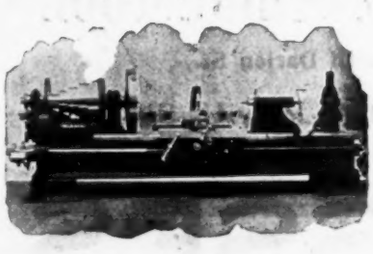

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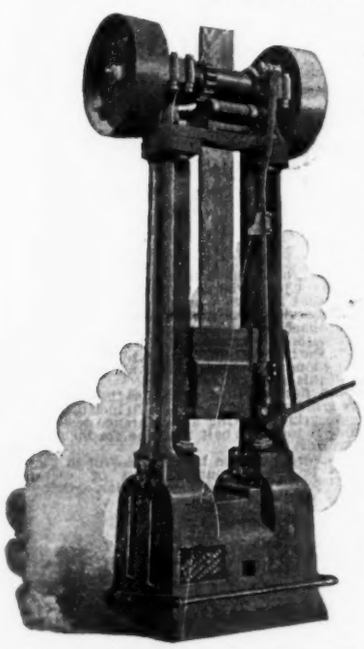

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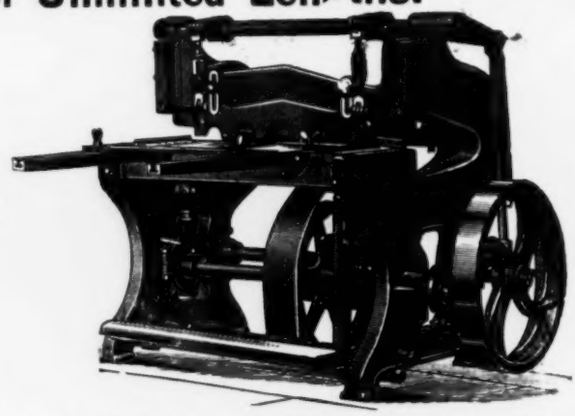

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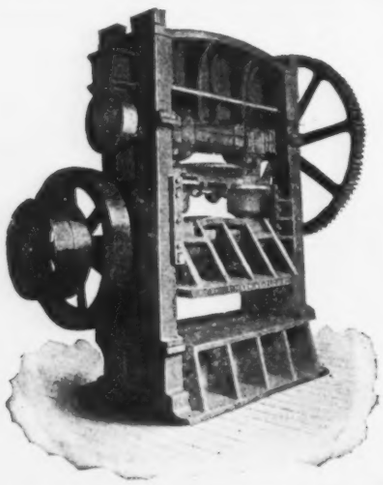

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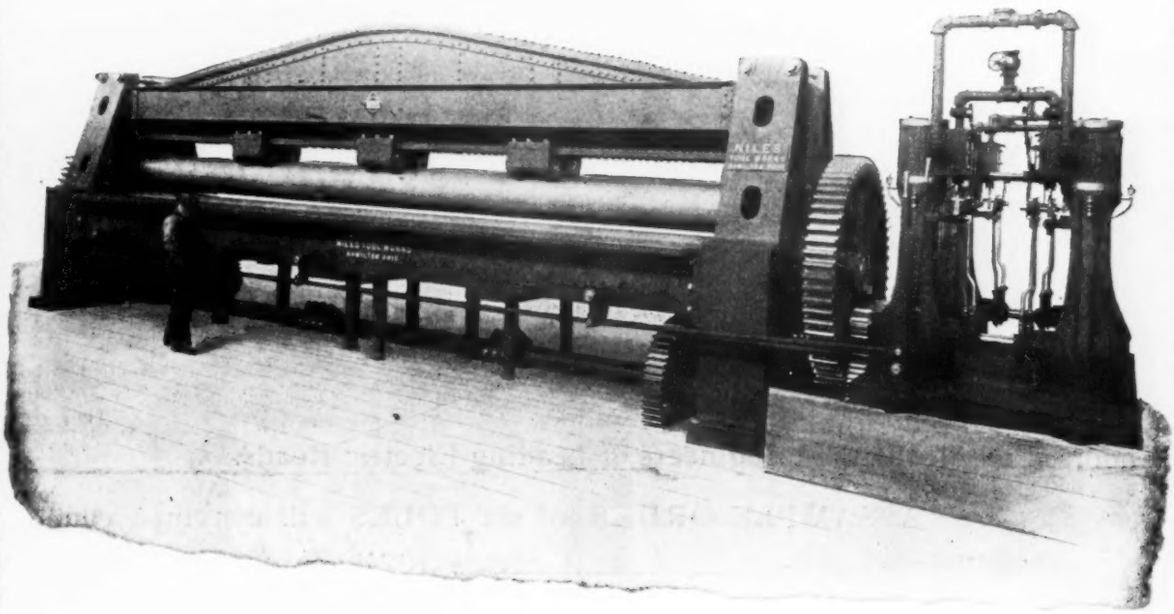

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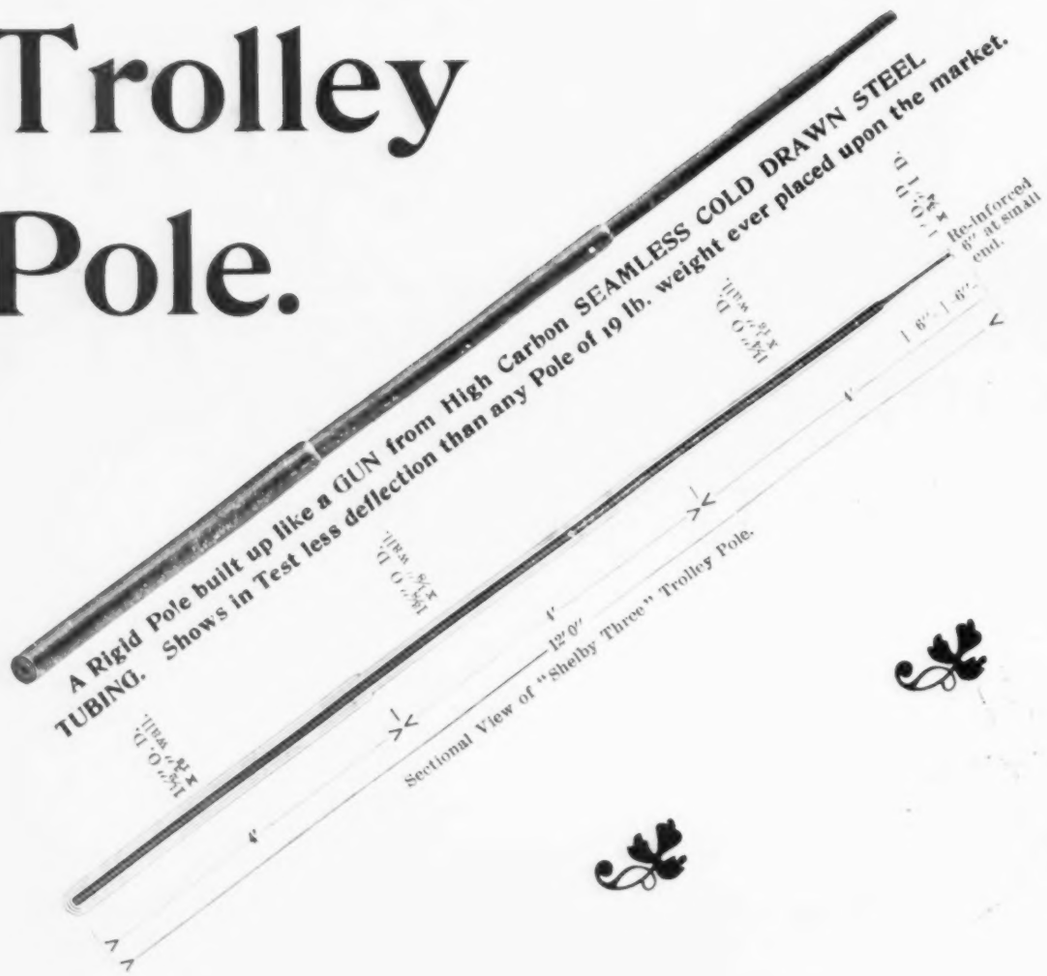

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ALL STANDARD LENGTHS IN STOCK.

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VERY CONVENIENT FOR
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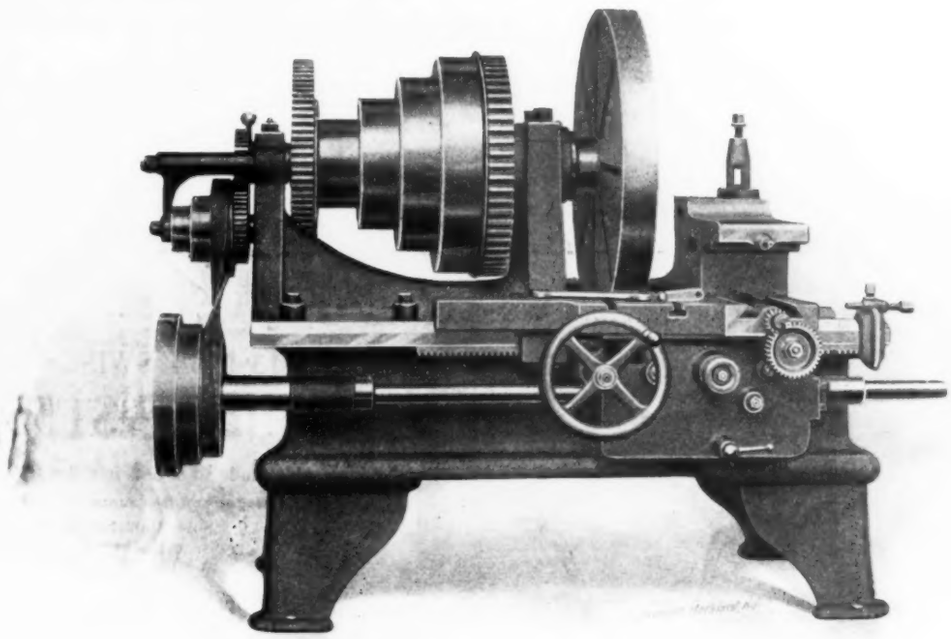

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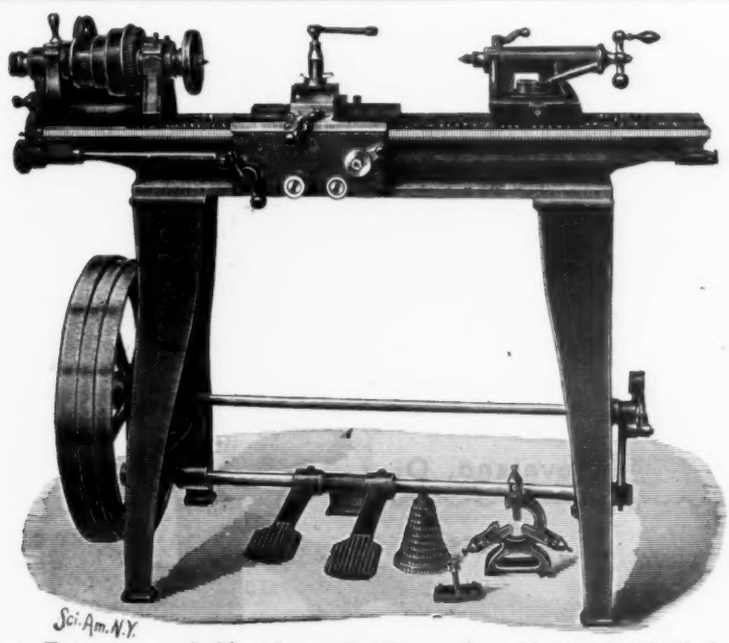

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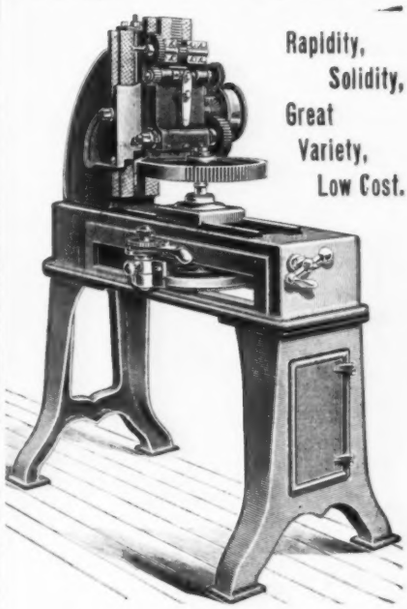

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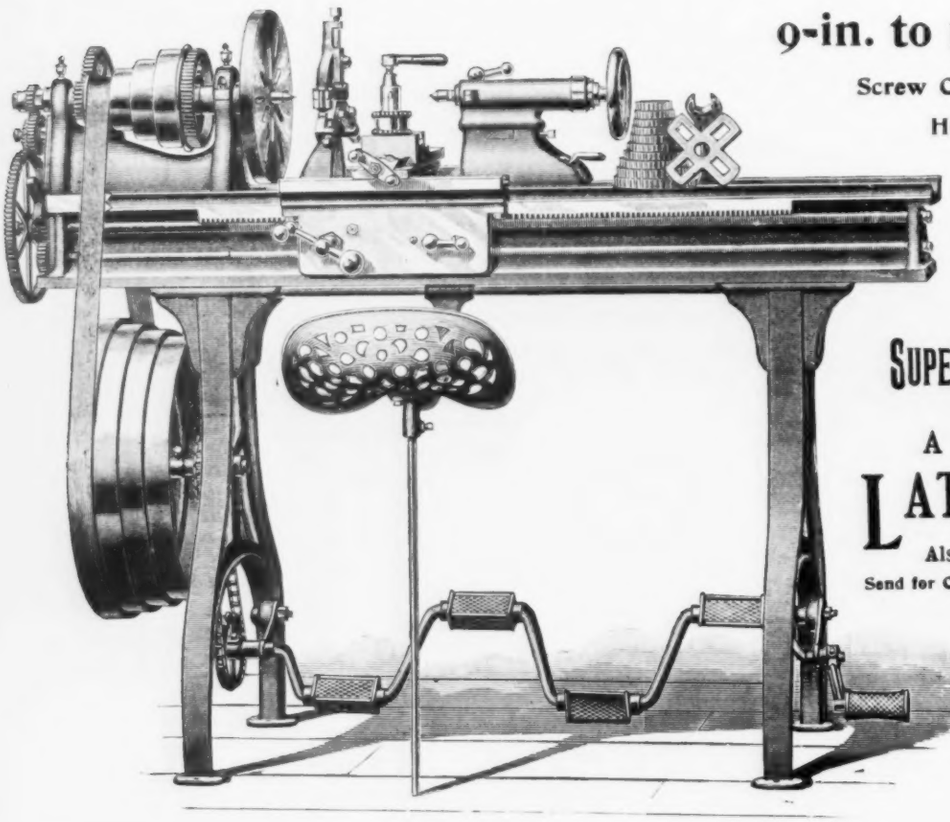

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designed for the rapid drilling of several holes in the same piece of work at one setting. Almost any shop will find use for it: drills to the center of an 8 foot circle.

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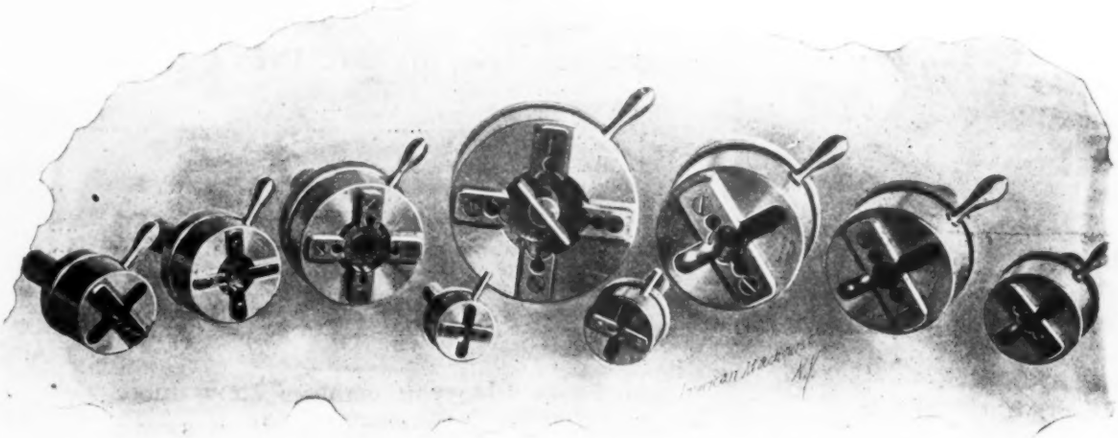

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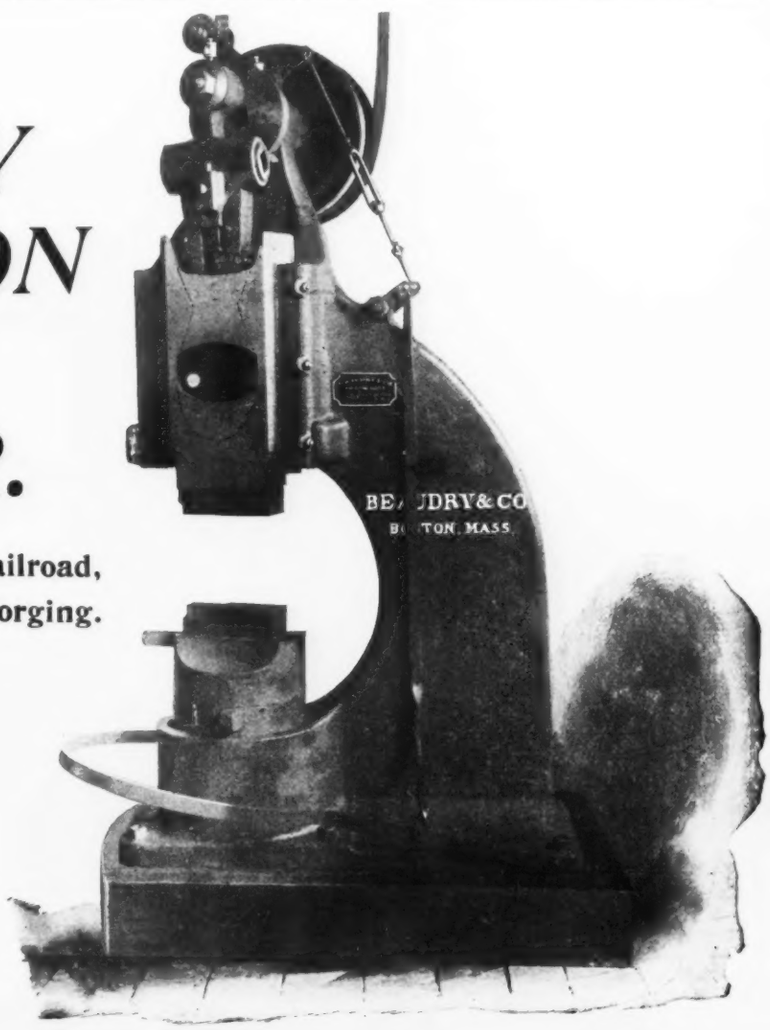

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Opening in bed	ins. 4x5
Distance back from center of slide	ins. 4
Opening through back	ins. 5¼
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Diameter of balance wheel	ins. 16
Face of balance wheel	ins. 2½
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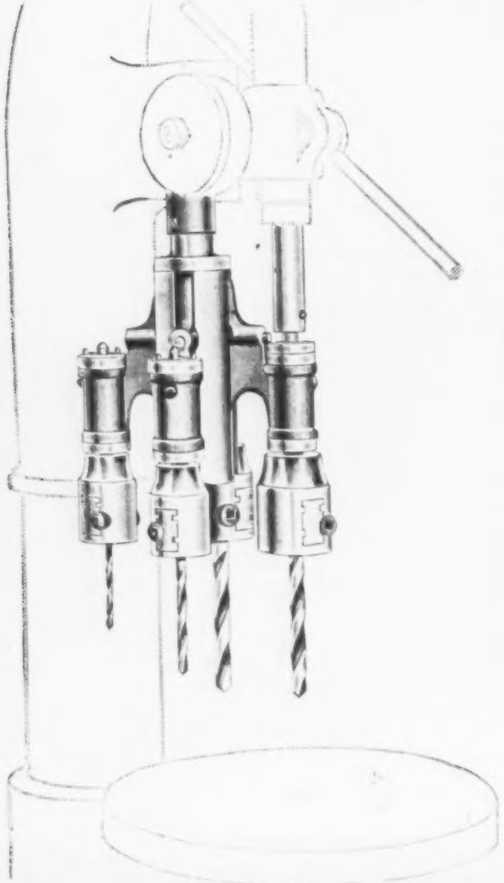

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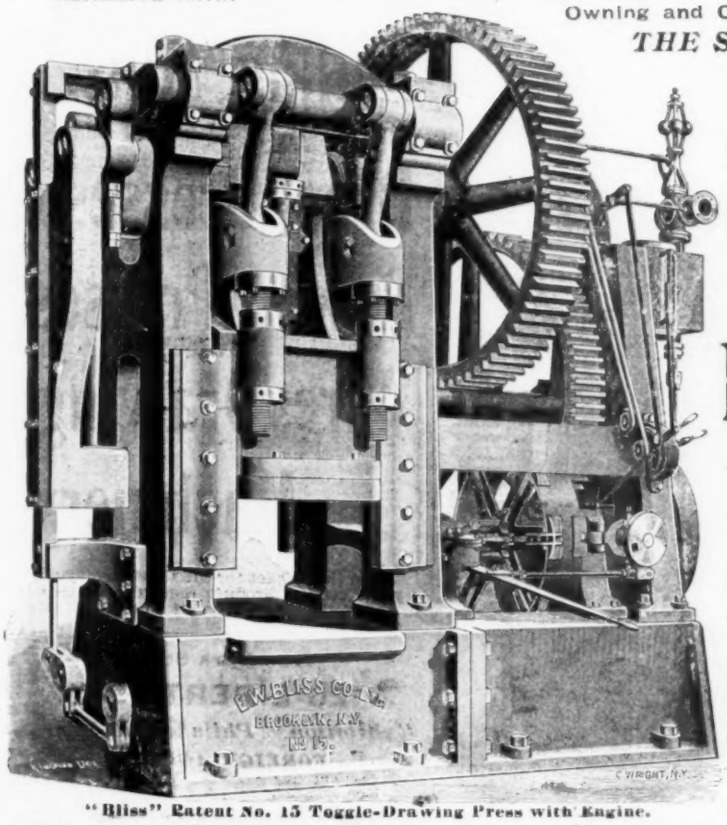

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For all operations in Punching, Drop Forging, Drawing, Stamping, Embossing, Wiring, Bending, Forming, Double Seaming, etc., etc.

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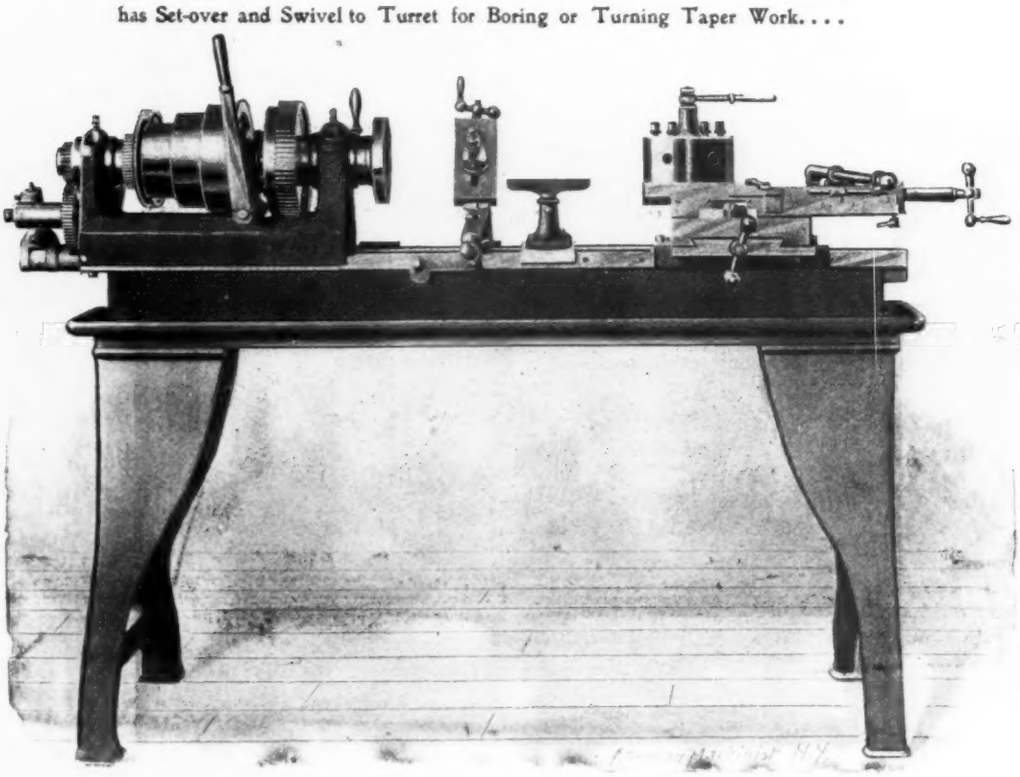

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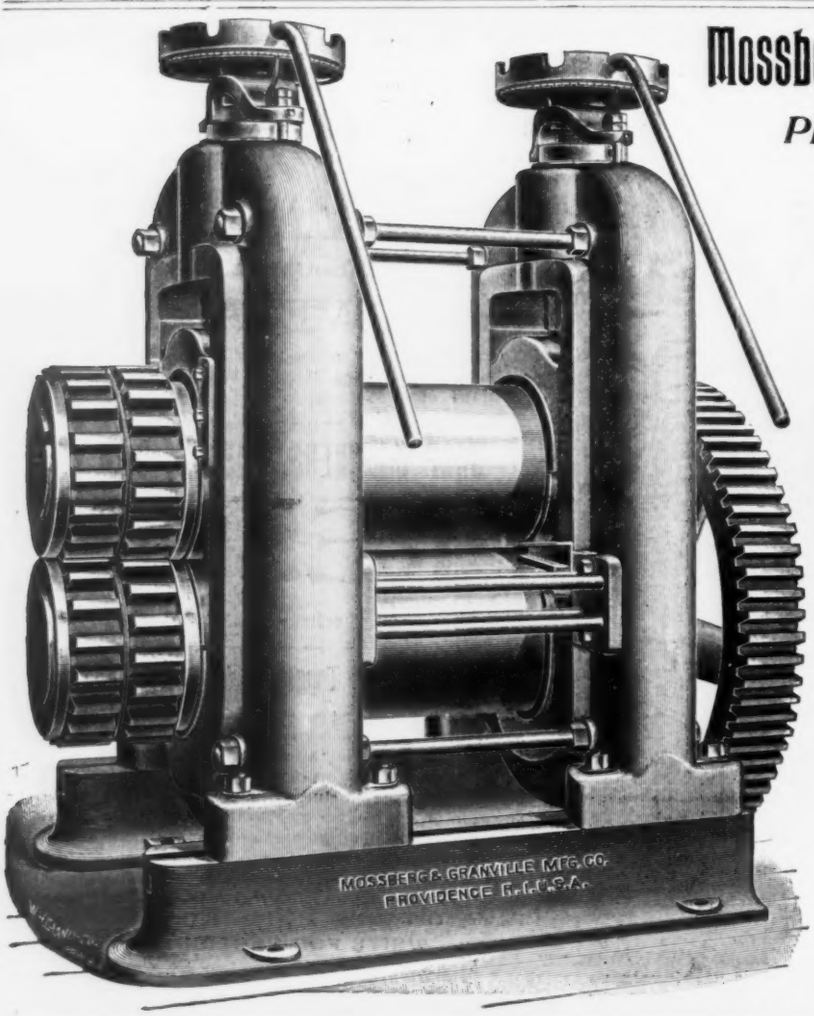

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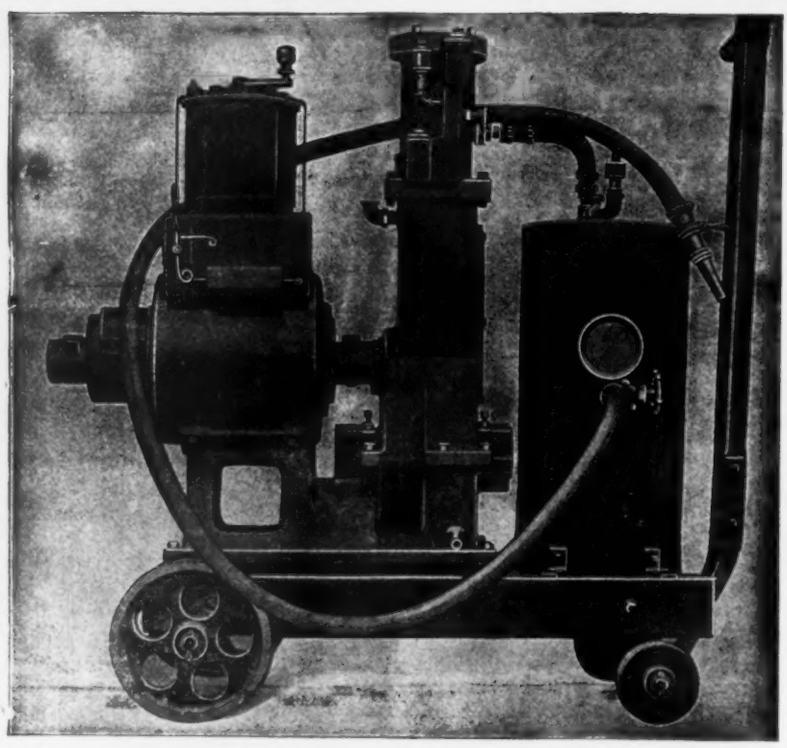

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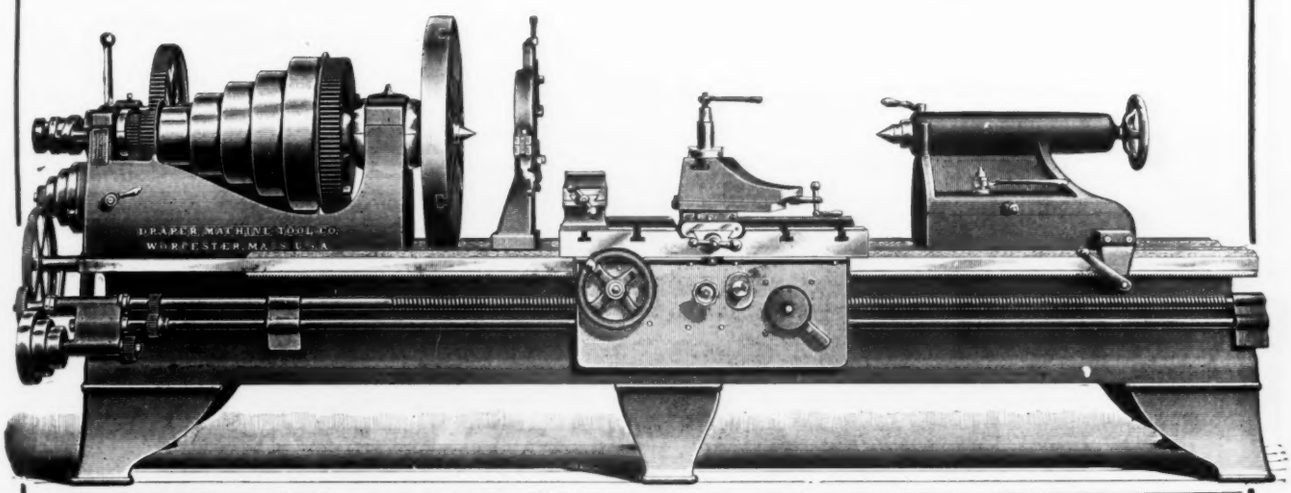

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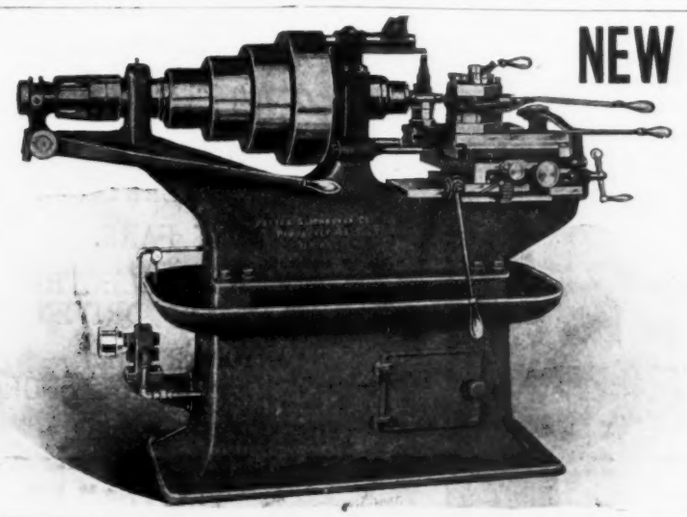

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will rapidly turn, bore, chuck, face, etc., machine parts.

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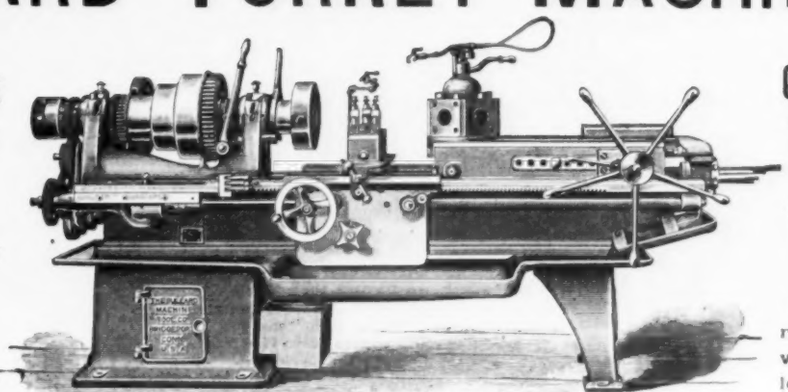

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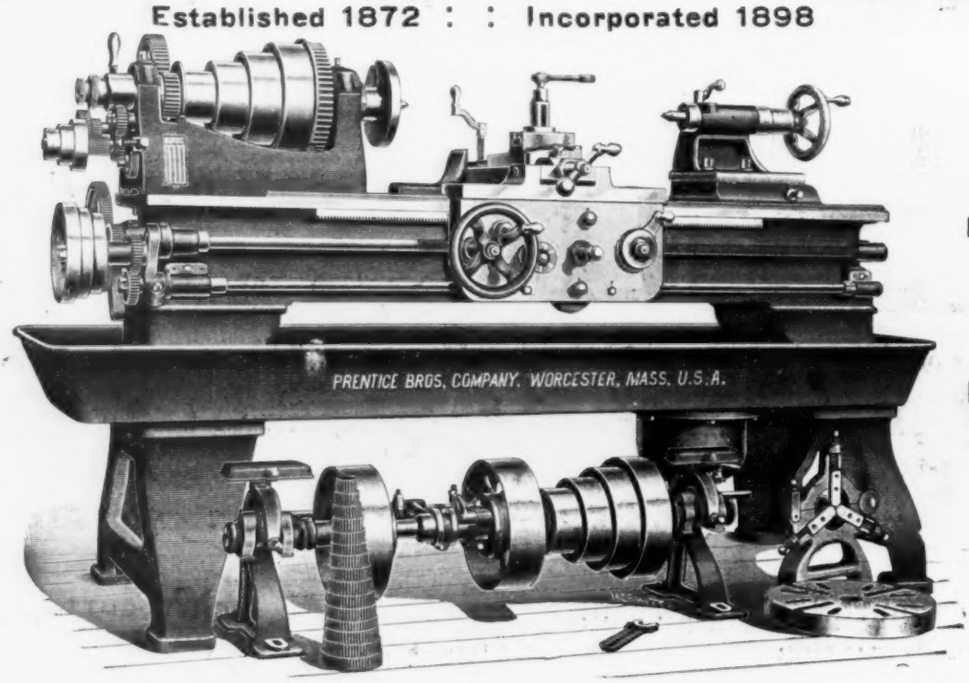

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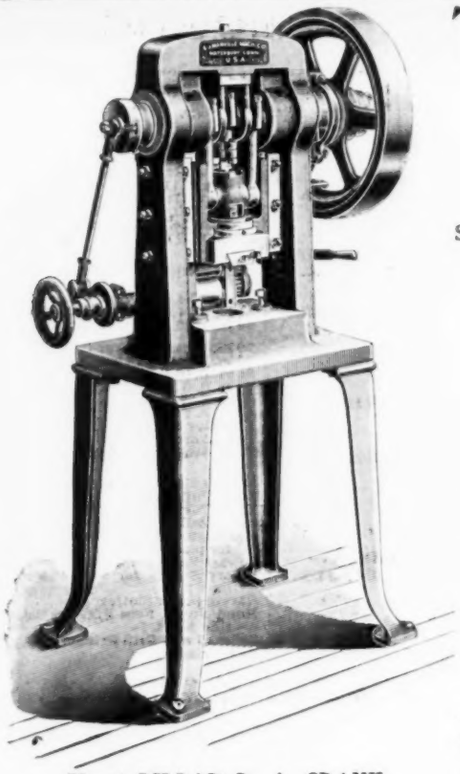

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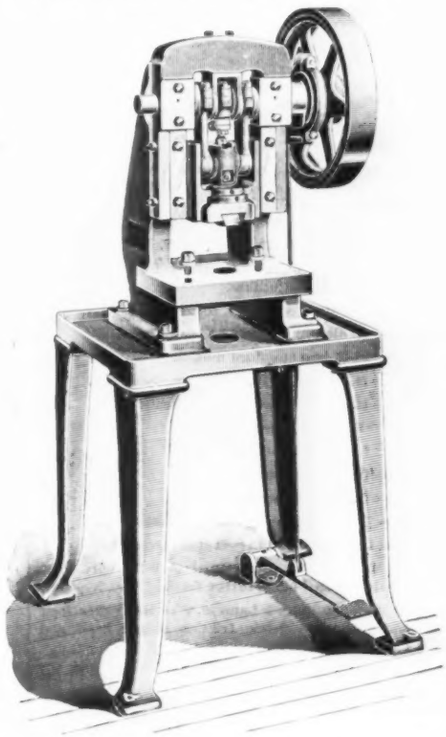

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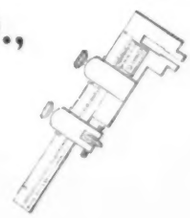
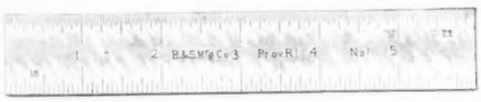
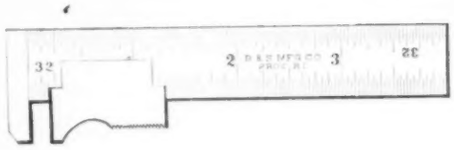
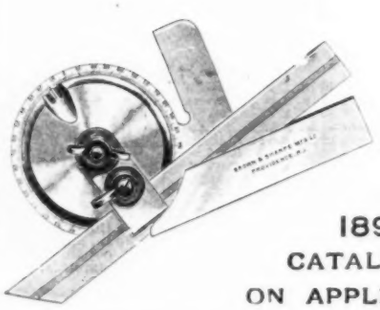
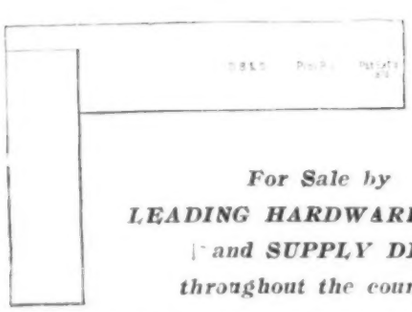


Machinists' TOOLS.









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16-14-13 and 12, best standard makes.

48 in. x 8 ft. Planer, L. W. Pond Mch. Tool Co.'s.

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30 in. x 6 ft. ditto, David W. Pond.

26 in. x 8 ft. ditto, Fitchburg.

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Shapers, 12 to 24 in., best standard makes.

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Screw Machine, No. 3 Garvin, 1 15-16 in. wire feed, friction geared head, turret feed.

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Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

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BOILERS.

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2 100 H. P. Loco. Style (Wooten fire boxes).
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26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in. built by C. H. Brown & Co., Fitchburg, Mass.

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IN FINE CONDITION.

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21 x 24 ft. Perkins Plain Rest and Chuck.
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40 in. New Haven Drill, Back Geared, Power Feed.
34 in. Barnes " " " " "
25 in. Prentice " " " " "
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17 in. Juengst Shaper.

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16 in. to 32 in. stroke.

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32 in. Gear Cutter, not automatic.
No. 2 Hilles & Jones Double End Punch and Shear, 16,000 lbs.
Send for complete list just out.

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SECOND-HAND MACHINERY.

1 Planer 72 in. x 36 in. x 9 ft., two heads.
1 Planer 60 in. x 60 in. x 14 ft., Screw feed, cheap.
1 Planer 16 in. x 16 in. x 3 ft. Gould Planer.
1 Iron Planer, 36 in. x 36 in. x 14 ft.
1 26 x 24 x 5 ft. Pond Planer.
1 Engine Lathe, 42 in. x 14 ft.
1 Engine Lathe, 22 in. x 14 ft., with chuck.
1 Heavy Pit Lathe, to swing 10 ft.
1 1000 lb. Steam Hammer.
1 2000 lb. Miles Steam Hammer.
1 400 lb. Morgan Steam Hammer.
1 250 lb. Morgan Steam Hammer.
1 48 in. Horizontal Boring Mill, Pond make.
1 Clayton Air Compressor, 16 in. x 16 in. x 14 in. stroke.
1 250 lb., 1 200 lb. Farrell Drop
1 Boring Bar, Star feed, 15 ft. 6 in. x 11 in. dia.

Machinery appraised any part of country.

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I buy Iron and Metal Scrap and wish to hear from anybody having cotton ties, pipe, hoops, cast borings, wrought and steel turnings, boilers, cast scrap, etc. Also wrecks from fire, etc.

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List of Machine Tools, etc., at Warwick Cycle Mfg. Co., Springfield, Mass. Ask for copy.

A. B. PITKIN MACHINERY CO.,
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One second-hand Punching Machine. Capacity 1⅛ hole in 1 in. plate. Address
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Rather than move the following new and second hand machines into our new shop, we will make SPECIAL PRICES on them. Write us!

LATHES.	12 in. x 5 ft. Bement. 12 in. x 6 ft. Silk. 16 in. x 7 ft. Harrington. 21½ in. x 11 ft. Thayer & Houghton 25 in. x 8 ft. Putnam, not s. c. 26 in. T. C. Lathe, 3⅛ in. hole in spindle. Tool front and back. 27 in. x 27 ft. L. & D., Taper.
SHAPER.	No. 2 Fitchburg, Traveling Head.
PLANERS.	24 in. x 24 in. x 6 ft. Whitcomb. 24 in. x 24 in. x 8 ft. Smith-Silk. 26 in. x 26 in. x 8 ft. Putnam.
DRILLS.	20 in. Wheel & Lever Drill. 20 in. Wheel & Lever, B. G. 24 in. B. G. P. F. A. S. 28 in. B. G. P. F. A. S. 32 in. B. G. P. F. A. S. 40 in. B. G. P. F. A. S. 1 Henley Swing Drill. 14 in. Aurora Sensitive. 16 in. Sensitive, Flickinger.
MISCELLANEOUS.	16 in. x 6 ft. Fox Monitor. 24 in. Pulley Lathe. 24 in. Turret Lathe, 4500 pound. 26 in. Pulley Lathe. Harrington Suspension Drill No. 2 for plate work. 1 Brass Valve Machine. Emery Stands for two wheels 1 in. x 2 in. Garvin Screw Slotter. Hand Forge, Foos Mfg. Co., Scientific No. 3. Sellers Twist Drill Grinder. Tool Grinder.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
Cincinnati, Ohio, U. S. A.

BARGAINS

IN

MACHINE TOOLS.

Almost New.

To be sold at second-hand prices.

1 84 in. x 18 ft. Engine Lathe.
1 24 in. x 10 ft. Ames Lathe.
22 in. x 12 ft. Flather Engine Lathe.
No. 0 Pratt & Whitney Screw Machine with wire feed.
1 Fitchburg 30 in. x 30 in. x 8 ft. Planer.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw Machine with wire feed.
1 Sellers 48 in. x 48 in. x 16 ft. Spiral Geared Planer.
No. 2 Knowles Keyseating Machine.
No. 14 Brainerd Tool Room Universal Miller.
1 2-spindle Profiling Machine.
1 63 in. Pond Vertical Boring Mill.
1 6 ton Single Acting Steam Hammer
1 2500 lb. Double " " "
1 400 lb. Pratt & Whitney Drop Hammer.
1 Helve Hammer.
1 Plate Shear.
Medart Power Shaft Straightening Machine up to 4¼ in. shafts.
1 3-head Slotter for locomotive frames; bed 36 ft. long.
1 3-spindle Drill for locomotive frames; table 24 ft. long.
1 Morgan Electric Crane, 15 tons.
2 Jib Cranes, 15 ton capacity.

Hill, Clarke & Co.,

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Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.

36 in. x 18 ft. Fifield.
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21 in. x 16 ft. S.C.Forsaith
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
16 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.

17 in. x 17 in. x 4 ft. Putnam Planer.
Hand Miller, Garvin.

Lincoln Miller, Pratt & W
1¾ in. x 5 ft. Turret Lathe
40 in. B.G.P.F. Drill, Lodge & Davis.
No. 3 Power Press, R. & E.
No. 4½ B. G. Garvin Mille
1 100 ton Hydraulic Ca
Wheel Press.
1 36 in. Car Wheel Borer
15 in. Davis&Egan Shaper
26 " " " "
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
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Also full line latest improved new machine tools.

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Second-Hand Tools.

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- 1 13 x 5 Plain Turret Lathe.
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- 1 15 x 6 Wood & Light.
- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
- 1 16 x 6 Porter.
- 1 17 x 8 Niles.
- 1 17 x 8 Muller.
- 1 18 x 8 Lodge & Davis.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 18 x 10 Steptoe-McFarlan.
- 1 20 x 8 Pond.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS
- 1 17 x 17 x 4 Putnam.
- 1 30 x 30 x 8 New Haven.

DRILLS.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS
- 1 15 in. Betts Traveling Head.

SCREW MACHS.
- 1 ⅛ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head.
- 1 No. 3 Pratt & Whitney, Plain head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
- 1 1⅛ in. Pratt & Whitney Cutting-off Machine.
- 1 Newton Keyseater.
- 1 Valve Milling Machine.
- 1 5 in. Cutting-off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
- 1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
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Plain Milling Machines (4 sizes).
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1⅛ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. CO.,

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FOR SALE.

Second-hand Machinery.

ENGINE LATHES.
- 1 54 in. x 22 ft. Pond, triple back geared; blocks to make it swing 66 in.
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- 1 24 in. x 16 ft. H. C. Fish & Co., blocks to raise to 32 in.
- 1 36 in. x 50 in. x 12 ft. Gap Lathe, triple B. G.
- 7 20 in. x 8 ft. to 12 ft. Lathes, different makes.
- 11 18 in. x 8 ft. to 12 ft Lathes, different makes.
- 6 16 in. x 6 ft. to 8 ft. Lathes, different makes.
- 23 14 in. x 6 ft Lathes, different makes and style of rests.

PLANERS.
- 1 36 in. x 36 in. x 9 Pond.
- 1 36 in. x 36 in. x 9 New Haven.
- 1 30 x 26 in. x 8 Putnam.
- 1 24 x 24 x 6 Whitcomb.
- 1 24 x 24 x 6 Pond.
- 1 22 x 22 x 5 Davis.

MILLING MACHS.
- 1 No. 4 Cincinnati univ.
- 1 No. 1 " "
- 1 No. 2 " plain.
- 1 No. 3 Brainard "
- 1 No. 3 Kempsmith "
- 1 No. 2 Garvin "
- 1 No. 13 Brown & Sharpe plain.
- 2 Ames Lincoln Pattern.
- 1 No. 3 P. & W. Lincoln Pattern.

SHAPERS.
- 1 26 in. Hendey.
- 2 15 in. "
- 1 20 in. Gould & Eberhardt
- 1 16 in. Steptoe.
- 1 14 in. Fitchburg.
- 1 14 in. Putnam, traveling head, two tables.

MISCELLANEOUS.

Screw Machines.
Turret Lathes.
Drill Presses.
Bolt Cutters.
Power Presses.
Bradley Hammers.
1 54 in. Bement Boring Mill.
1 12 in Bement Slotter

Also complete line of improved new machine tools.
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SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine,	85 H. P.	$225
One 9x18 " " " "	25 H. P.	125
One 65 H. P. Hor. Tubular Boiler, complete.		225
One 50 " Vertical " " "		200
One 40 " " " " "		200
One 12" Double Rocking Scrap Shear, - -		125
6", 5", 4", Section Steam Pumps, each -		100

SCHULTZ & CO., 14 So. Broad St., Philadelphia

HEAVY TOOLS.

For Quick Delivery—Good as New.

Column Lathe, 54 in x 30 ft., solid Cast Base, 2 Heads. Splendid Tool.

4-Spindle Drill Press, Movable Spindles and Table. Quick and Accurate. Heavy Tool. Finest Condition. H. E. PERRY, 3923 Union Av., Chicago.

LOCOMOTIVES!

One 35 Tons, Standard gauge, American Type, Cylinders 16 in x 20 in. Almost new and in splendid order. Will be sold at half value.

One 7½ Tons Standard gauge, Porter Saddle Tank, Cylinders 7 in. x 12 in. 4 drivers Same as new. Half price.

One 20 Tons 36 in. gauge, Porter Saddle-tank, Cylinders 12 in. x 16 in. Six drivers. Fine order.

THOMAS P. CONARD,
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FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright " "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright " "
20 40 x 36 Compound Wright Corliss Engine.
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14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " " "
10 Frisbie Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 3 ply Leather Belt, 85 ft. long.
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10-18 x 10¾ x 10 " " "
7-16 x 6 x 18 " Blake "

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FOR SALE.

1 28 x 54 Hamilton Corliss Engine.
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1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 19 K. W. Sturtevant Gen't'g Set.

WICKES BROS., Saginaw, Mich.

FOR SALE.

- 1 24 in. x 24 in. x 6 ft. Planer, Hilles & Jones.
- 1 36 in. x 24 in. x 6 ft. "
- 1 12 in. x 10 ft. Engine Lathe " "
- 1 21 in. x 10 ft. " " Fifield.
- 2 14 in. x 6 ft. " " Blaisdell.
- 1 18 in. x 9 ft. " " Lathe & Morse.
- 1 16 in. x 8 ft. " " Pratt & Whitney taper.
- 1 24 in. Crank Shaper, Gould & E.
- 1 42 in. Radial Drill, Hilles & Jones
- 1 8 in. x 12 in. Automatic Engine.
- 1 No. 8 Sturtevant Pressure Blower.
- 1 No. 4 Root Blower.
- 1 Ferracute Foot Press.
- 1 Roper Oil Separator.

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CORLISS ENGINES.

- 1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
- 1 16 x 42 left hand, 7 ft. Band Wheel and 12 ft. Fly wheel.
- 1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

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150 lb. BRADLEY NEW VERTICAL HELVE HAMMER.

This hammer is in original boxing as received from manufacturer, and may be bought for spot cash, well under the market.

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(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS
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Second-Hand Machinery.

Engine Lathes.
- 13 in. x 6 ft. Ames.
- 14 in. x 6 ft. Prentice.
- 16 in. x 6 ft. Ames.
- 18 in. x 12 ft. Bogart.
- 27 in. x 12 ft. W. & L.
- 16 in. x 8 ft. Pattern Maker's.

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- No. 2 Wire Feed.
- No. 2 P. & W., plain.
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- No. 4 Windsor, W. F., auto.
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- 16 in. x 16 in. x 4 ft.
- 20 in. x 20 in. x 5 ft.
- 24 in. x 24 in. x 6 ft.
- 25 in. x 25 in. x 10 ft.
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- 36 in. x 36 in. x 12 ft.
- 48 in. x 48 in. x 15 ft.
- 60 in. x 60 in. x 22 ft.
- 72 in. x 72 in. x 40 ft., 3 heads.

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- 9 in. T. H., Sellers.
- 13 in. T. H., Bement.
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- 6 Spindle, Quint.
- Pond Suspension.
- 22 in. G. & E., geared.
- 24 in. Ames, geared.
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- 32 in. Harris, geared.
- Combined Drill and Slotter.
- 4 spindle Ames.
- Bicycle Frame Drill.

Millers.
- Lincoln Type, P. & W.
- Hand Miller, Ames.
- Special Cam Miller.
- Double Head Cam Miller, P. & W.

Miscellaneous.
- 24 in. Lead Lap. Mch.
- No. 2 W. T. Grinder.
- Centering Machine.
- 24 in. Gear Cutter.
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- 48 in. x 12 ft. Hor. Boring and Drill. Machine.
- 12 in. Splitting Shear.
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We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,

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66-INCH PLANER

Delivery April 1st; planes 66 in. wide, 52 in. high; can be made any length of bed; two heads on cross rail; one or two side heads, as desired. Weight on 14 ft. bed 30,000 lbs. Send for full description and price.

36 in. Planers for delivery in thirty days.

84 in. x 84 in x 18 ft. Second-hand Planer, weight, 35,000 lbs. Send for photograph and full description.

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SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. 1½, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $250 each. Numerous machines not mentioned for want of space.

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ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in. tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine.
1 500 Light Multi-Polar Dynamo, 550 revolutions

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ROLLING MILL FOR SALE.

The entire plant of the Catasauqua Mfg. Co., known as Mill D, located at Fullerton, Pa., consisting of Plate Mill, Puddle Mill, Puddle and Heating Furnaces, Shears, Squeezers, Steam Hammer, Hydraulic Cranes, Boilers, Engines, Steam Pumps and Rolling Mill equipment.

J. H. McCLURE & SON,
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A FINE LOT OF

SECOND-HAND MACHINERY.

LATHES.

Heavy trip. grd. Pit.
60 x 20 Niles, P. G.
53 x 20 Gay & Silver.
36 x 13 New Haven.
30 x 15 New Haven.
26 x 12 New Haven.
26 x 11 New Haven.
26 x 11 Pl. turning.
25 x 30 shafting.
22 x 12 New Haven.
20 x 11 Sellers.
20 x 8 N.Y. Steam Eng. Co
18 x 10 New Haven.
18 x 6 New Haven.
17 x 8 Putnam.
16 x 8 Prentiss.
15 x 6 Blaisdell.
15 x 6 Sebastian May.
14 x 6 Hendey.
14 x 6 and 7 Bogert.
13 x 5 and 6 Ames.
12 x 5 Sellers.

PLANERS.

60 x 60 x 10 Bement.
42 x 42 x 16 Bement.
36 x 36 x 10 Putnam.
32 x 32 x 10 L. W. Pond.
32 x 32 x 8 New Haven.
27 x 27 x 6 Wood & Light.
26 x 26 x 6 Putnam.
25 x 25 x 6 Sellers.
24 x 24 x 8 Pratt & W.
24 x 24 x 6 Lathe & Morse.
24 x 24 x 6 L. W. Pond.
22 x 22 x 4 L. W. Pond.
20 x 20 x 5 Newton.
16 ft. Hilles & Jones plate.

DRILLS.

4 ft. Arm. Betts radial.
36 in. New Haven, B. G. & P. F.
28 in. New Haven, B.G., P.F.
26 in. Prentice, B. G. & P. F.
22 in. Lodge & Davis.

MILLING MACHS.

No. 3 Cinti. univ.
No. 1 B. & S. univ.
No. 2 Kempsmith plain with centres.
No. 1½ Garvin, power.
No. 5 Garvin, plain.
No. 7 and No. 8 Kempsmith.
6 Lincoln pattern.
No. 0 Van Norman.
3 D. W. Pond Index.

SHAPERS.

24 in. Walcott, shifting blt.
20 in. Prentiss fric.
12 and 15 in. Hendey fric.
12 in. Warren trav. hd.
10 in. Fitchburg, crank.
10 in. Gould, crank.
8 in. P. & W., crank.

MISCELLANEOUS.

12 in. Lowell slotter, all feeds.
10 in. Putnam slotter, fine.
6 in. Bement slotter.
4 in. bar, 6 ft. Bement horizontal boring mch.
4 in. bar, 7 ft. Newark horizontal boring mch.
50 in. Bickford vert. boring mill.
33 in. Car wheel borer.
Long & Alstatter punch and shear.
8 ft. 6 in. Bending rolls.
Set of hand bending rolls.
10 H.P. Eng. and Boiler.
7 H. P. Otto gas engine.
4 H. P. Globe Gas eng.
42 in. Gleason gear planer.
4-spindle Colts gun stock profiler.
¼ in. Adt riveter.
7 No. 2 Higley cold saws.
Lee & Hunt cold saw.
25 x 16 Pattern makers' lathe.
16 x 6 Clements.
30 in. J. A. Fay band saw.
36 x 48 in. rip saw table.
24 in. Pryable surface planer.

Above comprises only a few of our tools. Send for complete lists.

PRENTISS TOOL & SUPPLY CO.,
115 Liberty Street, New York.
Buffalo Office, 603 D. S. Morgan Bldg.

FOR SALE!!

SECOND-HAND

MULTIPLE SPINDLE DRILLS.

We have for sale upward of 25 drills from one to six spindles each. Will be sold at slaughter prices.

Send for special circular No. 12 if interested.

HILL, CLARKE & CO.,
156 Oliver St., Boston.

TACK MACHINES.

About 15 to 20 Tack Machines, if at right price.

State size and make and how long they have been running. Address

"TACK,"
Care *The Iron Age*, New York.

FOR SALE.

Compound Condensing Engine, 300 to 400 H. P., must be in first-class condition.
8 ft. or 10 ft. Slabbing Milling Machine.
Air Compressor capable of pumping 200 cu ft. of free air per minute.
Radial Drills.
2 Boring Mills, 6 ft. and 8 ft.
Flange Punch
Angle Shears to cut 6 x 6.
Plate Shears 72 in. between the housings.
Air Riveter.
Hydraulic Press 4 ft. between the housings.
2 Electric Cranes, 15 ton and 30 ton.
6 Jib Cranes, capacity 2 to 10 tons.

Address "A. C.,"
office of *The Iron Age*, 805 Fisher Bldg., Chicago, Ill.

FOR SALE.

One Guillotine Shear with 15 in. blade, opens 2 in., will cut ½ in. iron, made by Newbold.
One Rotary Shear with 4 ft. opening, cuts ⅝ in. iron, made by Pusey & Jones Co.
1 Rotary Shear with 2 ft. opening, reinforced for cutting scrap to ¾ in., made by Newbold.
One Rotary Shear with 5 ft. opening, cuts ⅛ in. iron, made by Newbold.

A. V. KAISER & CO.,
222 So. Third St., Philadelphia, Pa.

SECOND-HAND

Metal-Working Machinery

At Bargain Prices.

Lathes.

One 18 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24 in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N. Y. City.
Branches at Chicago and Pittsburg.

For Sale.

Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
Florence, Mass.

ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

FOR SALE.

1 32 in. x 108 in. Plate Mill, Roughing Rolls 28 in. x 84 in.; live tables and Vertical Table Engines.
1 Pair 36 in. x 40 in. Horizontal Reversing Engines.
1 110 in. Guillotine Plate Shear.
1 24 in. x 70 in. Blooming Mill, with 28 in. x 42 in. Reversing Engines, with gearing, tables and table engines.
1 18 in. 3-high Bar Mill.
1 20 in. 3-high Sheet Mill.
2 10 in. 3-high Guide Mills.
Engines, Shears, Punches and Cosgrove Straightener.
2 Hoisting Engines.
7 Boilers.
Engine Lathe, Foil Lathe, Planer Drill Press and Blowers.
1 10 in. Standard Gauge Locomotive Crane
Supply and Hydraulic Pumps and Cranes.
A Large lot of other machinery such as used in large steel works.

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh, Pa.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. At order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

2 Alligator Shears.
1 Rotary Shears.
Machinery of all kinds.
Tanks all sizes for sale or exchange for scrap iron.

WM. ECKBOLDS' SONS,
711 E. Girard Ave., Philadelphia.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

FOR SALE.

At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power.*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c. to J. Stewart Walker, Court's Agt., Lynchburg, Va.

FOR SALE.

ENGINE.

150 H.-P., Buck Automatic Cut-off.
Cylinder, 16 in. Diameter.
Stroke, 24 in.
Condition, Good.

THE JACOBS CORDAGE CO.,
Harriett and Budd Sts., Cin., O.

For Quick Delivery.

1 Shear with Engine 16 inch, used.
1 Roll for straightening light plates, used.
1 Roll 40 inch for sheets, new.
2 Hackney Hammers.

WAIS & ROOS P., S. & ROLL CO.,
Cincinnati, Ohio

PITTSBURGH

SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

No. 8 Wood St., Pittsburgh, Pa.

We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

FOR SALE.

About 1,500,000 lbs. Steel Plates,
from ¼ in. to 1⅛ in. 4 ft. x 22 ft. Very best material, low phosphorous.

500,000 lbs. Iron Tank Plates
⅛ in. thick, 2 ft. 6 in. x 7 ft.

About 120,000 lbs Steel Bars
4 in. to 8 in. x ¼ in.

Large lot Angles and Channels, 3 Stacks, 40 ft. x 36 in. x 3-8 in.

The above material is all new, coated with one coating of paint, and was in use in the lately demolished Gas Holder of the Consolidated Gas Co., 21st Street and Ave. A, New York, where it may be inspected.

Also 1 50-ton hoist,
with Engine and Blocks complete. Correspondence solicited.

H. A. HITNER'S SONS,
Gaul & Sergeant Sts., Philadelphia.

CHEAP.

Cameron Pumps.
Centrifugal Pumps.
Root Blower No. 2.
Large Sturtevant Blast Wheels.
Exhaust Fan, Ventilating Fans.
Guild & Garrison Double Vacuum Pump.

Above all in **perfect condition,** used only **two weeks** and will be sold **very low.**

VARIETY MACHINE CO.,
Warsaw, N. Y.

FOR SALE

at a bargain the following second-hand Foundry Equipment:

1 Colliau Cupola, melting capacity four tons per hour, in first-class condition.
1 Colliau Cupola, melting capacity six tons per hour, in fair condition.
1 No. 8 Sturtevant Blower, in good condition.
1 No. 10 Sturtevant Blower, in good condition.
1 36 in. x 53 in. double geared cast iron Rumblers.
1 36 in. x 43 in. single geared cast iron Rumbler.
All can be seen at our works.

GENERAL ELECTRIC COMPANY,
Schenectady, N. Y.

FOR SALE.

500 up-to-date '98 wheels in lots of 25 or more. Bargain for spot cash buyers.

Address

BOX 472, Canton, O.

INTEREST WANTED.

A gentleman in the wholesale saddlery and carriage hardware business would dispose of his business, and join himself with a stock company. Has had nineteen (19) years' experience in his business and been successful.

Address "SADDLERY,"
Care *The Iron Age*, New York.

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 790, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

Metals Wanted.

We buy Tin Pipe, Tin Foil, Old Babbitt Metal, etc. Will pay good prices. Write us what you have and what you want for it.

MARKLE LEAD WORKS,
St. Louis, Mo.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
Care *The Iron Age*, 805 Fisher Bldg., Chicago.

NAIL MACHINES For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

FOR SALE.

Foundry and Machine Shop in one of the best cities of 15,000 inhabitants in Eastern Ohio. Well equipped, with large established trade on specialties. To be sold on account of death. Address "FOUNDRY," office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

FOR SALE.

Four fly wheels, each 25 feet in diameter, weighing 42 tons each, built in 12 segments and two centers, with rims turned and faced. We built these wheels for our own tin mills, and after a few months' use of them replaced them with heavier wheels. Will be sold low.

MACKINTOSH, HEMPHILL & CO.,
Pittsburgh, Pa.

WANTED.

Wanted to buy a second-hand railroad track scale. Address with full particulars,

CHICAGO HOUSE WRECKING CO.,
West 35th and Iron St., Chicago, Ill.

WANTED.

A 7 ft. Niles Double Head Boring and Turning Mill in first-class order. Address

THE PATTERSON TOOL & SUPPLY CO.,
Dayton, O.

FOR SALE.

We offer for sale the following plants, with all real estate, buildings machinery, fixtures and tools complete, or we will dismantle same to suit buyers.

Danville Rolling Mills and Nail Works, Danville, Pa.
Cofrode & Saylor Bridge Works, Pottstown, Pa.
Rolling Mills A and B, Catasaqua, Pa.
Rolling Mill C, Fullerton, Pa.
Irondale Furnace, Independence, W. Va.

These plants contain over 7,000 tons of machinery and equipment of every description.

C. R. BAIRD & CO.
Pig Iron,
Philadelphia, Pa.

Tack Machines For Sale.

Two Machines, 6 to 24 oz.
One Machine, 0 to 8 oz
One Machine, 8 to 24 oz.
Also Shear for trimming stock.

Have been but little used; are as good as new.

ANDREW F. WEST,
Buffalo, N. Y.

For Sale Cheap.

One Ames Slide Valve Engine, 30 H. P.
Miscellaneous lot of shafting and pulleys in good condition.

1 36 inch Volume Blower.
1 No. 1 Pressure Blower.
1 " 2 " "
1 " 5 " "
1 18-inch Ventilator.
1 24- " "
1 30- " "
1 36- " "

All new and in perfect condition. Will be sold at less than one-half of cost.

M. E. CONDON,
105 Broad St., Utica, N. Y.

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for *immediate operation,* consisting of *complete Skelp Mill,*

6 Double puddling furnaces,
3 Heating furnaces,
3 Trains of rolls; also
2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

The Blast Furnace with this property will be dismantled. The Blowing Engines, Pumps, Dynamo, etc., are for sale.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

For particulars address the Secretary of The Board of Trade, Worcester, Mass.

Capital to Invest.

Correspondence is invited by a party of Capitalists lately identified with the Iron and Steel business, from any manufacturer who has an established business and desires additional capital, or wishes to dispose of his property. Others who have articles of merit and desire to sell, or require more capital, are requested to communicate with us by addressing communications to "W. L. G.," care *The Iron Age,* New York.

BLAST FURNACE MACHINERY.

Wanted, catalogues, circulars and photographs of all kinds of Blast Furnace Machinery and special Dies.

THE MILLOM & ASKAM HEMATITE IRON CO., Limited.
MILLOM, CUMBERLAND, ENGLAND.

FOR SALE.

One 22 x 42 in. Wright Corliss Engine. Band Wheel 16 ft. x 36 in.

This engine is in first-class order and will be sold at a very reasonable price.

CRANE CO., - - Chicago.

FOR SALE.

One No. 10 Bryant saw, with 20 saw blades, Q. & C. make; only used about two months; in perfect condition and will sell for a low price.

THE ASCHMAN STEEL CASTING COMPANY,
Sharon, Pa.

FOR SALE.
Famous Iron Property.

Finest Bessemer Stee -making Ore; system of wagon-roads; line of railway; full reports, maps, etc. Responsible principals only dealt with

BRONN & BRONN,
41 Union Square, New York City.

FOR SALE CHEAP.—Improved water power, 100 horse power, for the manufacture of all kinds of fruit packages, or for novelty works articles made of wood. Nearly 700 carloads of grapes were raised and shipped within a radius of ten miles of here last fall. The fruit packages for this amount to $45,000. This is the banner county in the state for grapes. We also raise cherries, berries, pears, peaches, currants and apples for shipping. The fruit interests here are enormous and are growing wonderfully every year. The fruit growers want a basket package factory here. The timber is here in abundance and cheap nearby. A good chance for a hustling man. A large building and dwelling are on the premises. We are situated in South Western Michigan, 30 miles from Lake Michigan, 125 miles from Chicago, with good shipping facilities. For further particulars write owners, G. W. TYLER & CO., Paw Paw, Michigan.

FOR SALE.

CLEAN STOCK OF HARDWARE and Stoves in North Central Kansas; well established and doing fine business; invoice from $13,000 to $14,000. Will be sold at a bargain for cash or will take some clear land or give time on part of purchase price. Address TICE & WILSON, Beloit, Kansas.

Second-hand Tools

AT

WARWICK CYCLE MFG. CO.,

Springfield, Mass.

9 Hartford Automatic Screw Machines.
6 Cleveland Automatic Screw Machines.
36 Pratt & Whitney Screw and Chucking Machines
35 Lathes, engine and speed.
10 Milling Machines and Shapers.
Drills, Presses, Grinding and Polishing Machinery, several special bicycle machines and a large number of miscellaneous tools.
Send for complete list.
Representative at the works daily.

A. B. PITKIN MACHINERY CO.,

PROVIDENCE, R. I.

UNDER THE WINDING-UP ACT.

Canada,
Province of Quebec. } Superior Court.
District of Montreal.

In the matter of

—THE—

Londonderry Iron Company, Ltd.

MONTREAL.

(In Liquidation.)

The undersigned, by order of Hon. Justice Curran, dated 17th February, 1899, is authorized to offer for sale the various properties and plants belonging to the said Company, situated at or near Londonderry, N. S., consisting of about 30,000 acres of selected mineral lands held in fee simple, free of royalties, with blast furnace, coke ovens, rolling mill, pipe and general foundry, machine shop, about twelve miles of railway with rolling stock, numerous houses, and all the plants incidental to the production of iron on a large scale.

The lands carry a large quantity of timber, and are traversed by considerable streams, upon which are many water powers.

The property will be sold subject to existing leases, and tenders will be received by me at my office as under, where full inventories, plans, etc., can be seen on application.

GEORGE CREAK, C. A.,
Liquidator.

12 Bank of Toronto Chambers,
Montreal,
18th February, 1899.

A GENTLEMAN

with well equipped office, stenographer, city salesman etc., in Chicago, and having extended acquaintance with general managers, engineers and purchasing agents of Western railways, would like to represent manufacturers. Address "P. B. P.," care *The Iron Age*, 835 Fisher Bldg., Chicago, Ill.

WANTED.

Hardware Specialties,

IRON OR BRASS.

Light Machinery,

TO MANUFACTURE.

Good Shop. Good Tools, Good Workmen.

HAGEN & REID,

Troy, N. Y.

For Sale in Cleveland, Ohio.

AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business Address

HERO STAMPING WORKS,

Room 407, Cuyahoga Bldg., Cleveland, O.

Locations for Industries.

The Chicago Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y.
Old Colony Building, Chicago, Ill.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

WIRE WANTED

Any one having Coarse Wire (Iron or Steel), odd lots, size from No. 3, wire gauge, to No. 16 long pieces, they would like to sell, write to

The Horace Lamb Wire Co.,
Northampton, Mass.

Texas Shop Cheap

Well equipped foundry, boiler and machine shops suitable for engine and railroad work. Contain wheel press, planers and shapers; lathes 15 to 44 in. swing up to 26 ft. bed. One and one-half acres of land. Big lot of patrons and business good the year round. Reason for selling—disability and old age.

Address A. DEMARCE, Texarkana, Texas.

FOR SALE.

60 TONS FAIRBANKS' STANDARD RAILROAD TRACK SCALES.

Been used eighteen months under cover. "Good as New."

Also want 80 H. P. Tubular Horizontal Boiler 60 x 16—3½ or 4 inch Tubes.

JOHNSON & CO.,
Mt. Gilead, - - Ohio.

FOR SALE

Bessemer Plant and Blooming Mill

of the North Branch Steel Company.

Plate Mill For Lease

SITUATED AT : : : : DANVILLE, PA.

The Steel Plant is entirely new and practically ready for operation; it contains two 5-ton vessels and a 32-in. reversing Blooming, Slabbing and Billet Mill. If desired, its 28-in. Plate Mill, which is situated only a short distance from the Slabbing Mill, could be leased.

Danville is on the line of the Catawissa Branch of the P. & R. R. R. and the Bloomsburg Branch of the D., L. & W. R. R.; is directly across the river from and connected by bridge with South Danville, through which a branch of the P. R. R. runs, and is within 12 miles by rail of Northumberland, through which the Northern Central Branch of the P. R. R. passes.

There is a good home market for a part of the product of the above plant, and the starting of it up would make Danville an excellent location for a Tin Plate Works. Full information may be obtained of

THE NORTH BRANCH STEEL COMPANY,
25th St. and Washington Ave., - PHILA., PA.

TYPEWRITERS.

We will exchange typewriters, all guaranteed, and send subject to trial, in exchange for merchandise. What will you offer?

BROWNE & MANSFIELD, 245 Broadway, New York.

TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address

"H.,"
office of *The Iron Age*, 70 Kilby St., Boston, Mass.

WANTED.

Jobs and Specials for SPOT. Send particulars.

BROWNE & MANSFIELD,
245 Broadway, New York.

WANTED.

First-class mechanical designer with a few thousand dollars capital to take an active interest in an old established and growing business, with a good salary and dividends on money invested. Apply, giving references and amount of money you are willing to invest. Address

"INVESTMENT,"
Care *The Iron Age*, New York.

Blast Furnaces For Sale.

I have for sale five blast furnaces, one in Virginia, one in Pennsylvania, one in Tennessee and two in Alabama. Some of these furnaces own their own coal, coke ovens and ore and could be started up very quickly. They can be sold **far below the original cost.** Three of these are strictly modern furnaces.

For particulars address

J. H. HILLMAN,
No. 8 Wood Street, Pittsburgh, Pa.

BUSINESS OPPORTUNITY.

A practical young man wanted to invest in one-half interest in an old established manufacturing house in Northern Ohio. Object, aid in managing and sales. Good salary. Best of references. Address with reference,

"BUSINESS OPPORTUNITY,"
care *The Iron Age*,
312 Cuyahoga Building, Cleveland, O.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

PHILADELPHIA SALES AGENCY.

FITCHBURG MACHINE WORKS.
P. BLAISDELL & CO.
BRADFORD MILL CO.
BICKFORD DRILL & TOOL CO.
CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second Hand Machinery.

JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia.

FOR SALE.

Watts-Campbell 18 in. x 42 in. Automatic Engine.

Corliss 10 in. x 24 in., now running.

14 in. x 12 in. Ideal with direct connected 75 K-W. General Electric Multipolar Dynamo.

C. HOFFMAN,
63 Gold St., New York.

WANTED.

Shears and Angle Straightening Machines.

Two good Shears to cut bushelling scrap and also a good Angle Straightening Machine to straighten up to 4 in. x 4 in. angles. Give full particulars and prices.

"MACHINERY,"
Care *The Iron Age*, New York.

IRON FOUNDRY FOR SALE OR TO LET.

No. 884 and 886 Metropolitan Ave., Brooklyn.
WILLIAM T. GRAFF,
229 Broadway, New York City.

NO. 32 CLIFF ST.,

four story brick building, to let from May 1; suitable for the iron business.

CHARLES S. BROWN, 59 Liberty St., N. Y.

WANTED.

File Forger. One who can temper or grind can hear of a rare chance to invest small amount. Address

"FILE,"
care *The Iron Age*, New York.

FOR SALE.

Left hand Corliss Engine, 20 in. x 60 in., good as new, has heavy 10 in. shaft suitable for heavy fly wheel or band wheel. F.O.B. cars $600. Address "C E.," care *The Iron Age*, New York.

MANUFACTURERS.

GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

Address, "M. M. N.,"
office of *The Iron Age*, New York.

FOR SALE.

An old established jobbing and retail stock of hardware, in a prosperous Western city of 20,000 people and a railroad center. Established in 1866 and the owner now wishes to retire, after 33 years' continuous and prosperous business. Will be sold cheap. No trade. Address "No. 117," care *The Iron Age*, Commercial Building, St. Louis.

Iron Merchants

in London with branch office on the Continent, solicit agencies for American goods, Nails, Wire Joists, etc. Address 14/26, care IRONMONGER, 42 Cannon Street, London, England.

MICHIGAN COLLEGE OF MINES.

Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address

DR. M. E. WADSWORTH, President,
Houghton, Michigan.

FOR SALE OR LEASE on easy terms, 5 lots situated in Jersey City, for manufacturing purposes. Close by all ferries and railroads; shipping facilities unequaled. Address "H., 216," care *The Iron Age*, New York.

EUGENE V. N. BISSELL, Auctioneer.

E. BISSELL & CO.,

Successors to
HAYDOCK & BISSELL
WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

SALESMEN WANTED

in every State in the Union who visit the manufacturers of Dynamos and Motors, Electrical Street Railways, Electrical Repair Shops, Electrical Supply Jobbers, to take our line of Insulation on Commission. Good live salesmen can add twelve to fifteen hundred dollars per year to their incomes. All necessary samples can be carried in pocket.

W. H. SILLS MICA CO.,
60, 62, 64 Michigan Ave., Chicago.

File Factory
FOR SALE

On Saturday, April 1, 1899, the plant of the late McClellan File Co. will be sold at the Saginaw County Court House, by Circuit Court Commissioner, to satisfy mortgages about one-third the value of the plant, which will be sold entir comprising real estate, buildings and all machinery.

The factory has a capacity of 500 dozen files per day, and is one of the most thoroughly equipped file factories in the country.

Plenty of cheap fuel. An elegant opportunity on a small capital to manufacture files for the trade, or to operate it as a recutting factory. For further particulars address

GEO. J. LITTLE, Saginaw, Mich.
For Mortgagees.

FOR SALE.

Rolling Mill at Bristol, Pa., well equipped for making Bars, Band and Hoop Iron.

RODMAN WISTER,
Trustee,
672 Bullitt Bldg., Philadelphia, Pa.

TO BE SOLD

The large and elegant furnace property of the Rome Iron Co., near Rome, Ga., together with a large number of acres of mineral lands lying in Chattooga, County, Georgia, and Cherokee County, Alabama, will be sold at the furnace at 12 o'clock noon, Monday, March 27th, for the Bond Holders.

For further information, address

GEO. H. WEBB, Trustee,
for First Mortgage Bond Holders,
Chattanooga, Tenn.

Track Scale Wanted.

Wanted. 50 ton Railroad Track Scale. Must be in first-class condition.

Address "TRACK SCALE,"

office of *The Iron Age*, 805 Fisher Building, Chicago, Ill.

Export To Austria.

First rate firm of engineers, Vienna, doing exclusive business with official and private establishments, wants to represent large concerns manufacturing motors, machines, tools, electrical supplies, etc.

"EXPORT," Box 32,
Care *The Iron Age*, New York.

Manufacturers

of Bicycle Sundries, Hardware Specialties, etc. desiring live representation throughout the **World** are requested to communicate with A1 New York City House by addressing

"T. M.," No. 32,
Care *The Iron Age*, New York

FOR SALE.

At a reasonable price stock and fixtures of a hardware, house furnishing and painters' supply store. Established 25 years. Located in Jersey City. Will inventory about $8000. Good store, cheap rent and best location. Best of reasons for selling. A fine opportunity for some one. Address

F. SEARS, P. O. Box 85, Jersey City, N. J.

BLOWER.

Good second-hand Cupola Pressure Blower, 3500 cu. ft. per minute. State maker, size and condition. Address "BLOWER," care *The Iron Age*, New York.

Of Interest to Capitalists.

A competent mechanical engineer or machinery salesman with capital to take an interest in a live concern with a good line of standard tools who desire to add another large line. A splendid opportunity. Address

"STANDARD TOOLS,"
22 Pickering Bldg., Cincinnati, Ohio.

WANTED.

Man with one to three thousand dollars as financial partner in paying hardware specialty business. Address "R.," care *The Iron Age*, New York.

THE City of Harlcon, Wisconsin needs a new factory to employ not less than 100 men. Bicycle factory preferred. Good location. Three branches of railroad. City can give bonds. Business men will buy shares if necessary. Write quick to "MAYOR," Harlcon, Wisconsin.

SHELBY & CO.,
Engineers' and Hardware Merchants,

Finsbury Circus Buildings, London, Eng., will be pleased to open correspondence with makers of Specialties for Sole Representation in Great Britain.

FLY WHEELS.

One 11 foot, in halves. 10 tons weight. One 8½ foot solid, 1½ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

WANTED.
SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

WANTED.
Scrap Iron and Steel.

Correspondence Solicited.
C. BOTJER, 405 Newark St., Hoboken, N. J.

AMERICAN RAILWAY SUPPLY COMPANY,

Manufacturers of

Baggage, Hotel and Time Checks, Metal Figures and Letters and everything in the line of Stamped Metal Work.

24 PARK PLACE, NEW YORK.

SCRATCH CLOTH

for cleaning files and other tools.

WIRE CABLE

in job lots, at very low prices.

WALSH'S SONS & CO.
Newark, N. J.

Scrap Iron, Steel & Metals
New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.
Telephone Call, 897 18th St.

Morton B. Smith,

243 FRONT ST., NEW YORK.

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 56 and 60 lb. first-class Relaying Steel Tee Rails with splices.
850 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first-class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section, 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300	tons	56's.
70	"	60's.
75	"	50's.
50	"	72's.

WM. H. PERRY CO.,
Providence, R. I.

The DEFIANCE BOX CO.,

DEFIANCE, OHIO. Manufacturers of

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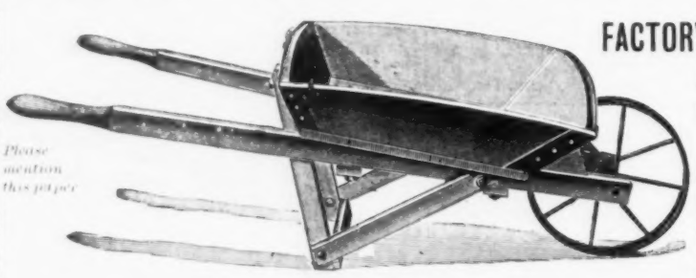

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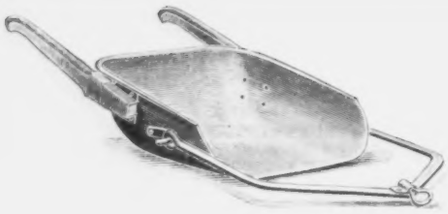

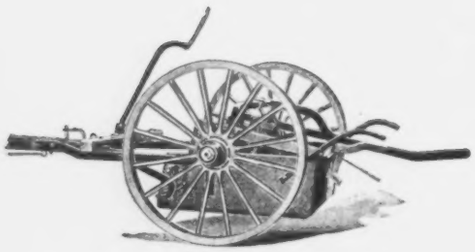

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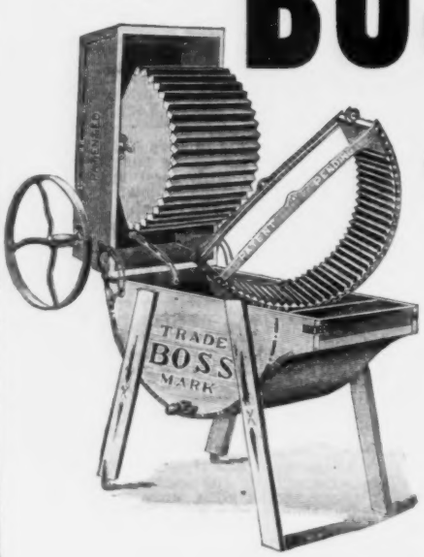

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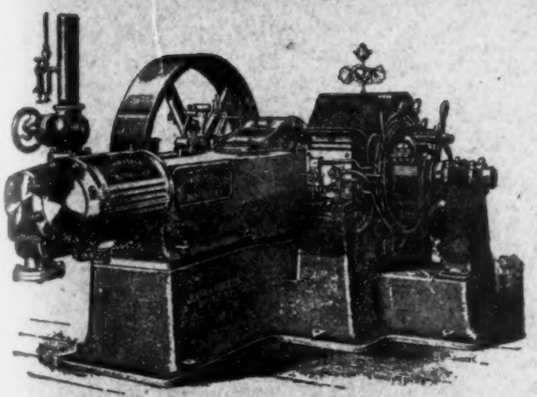

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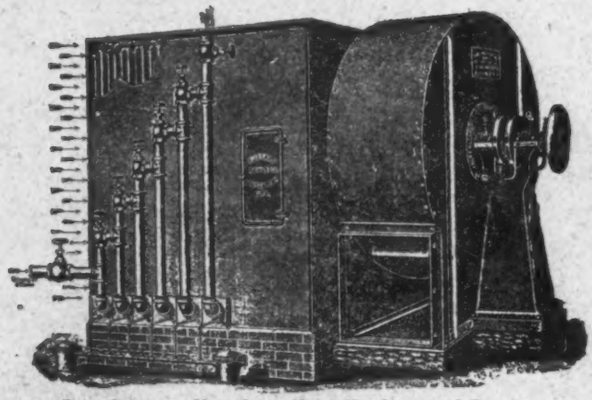

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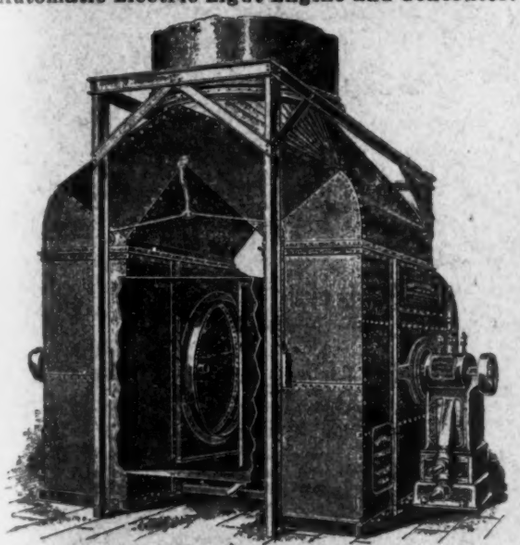

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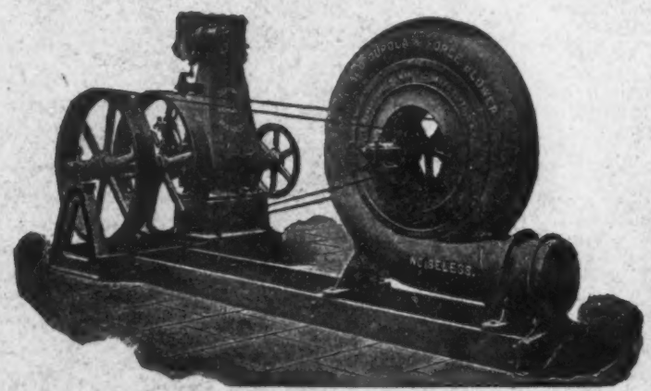

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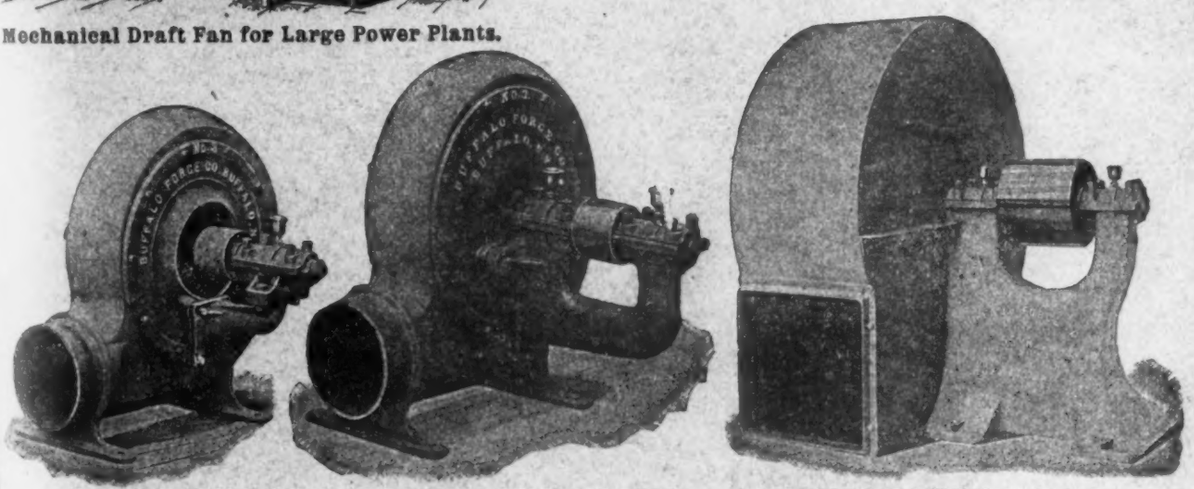

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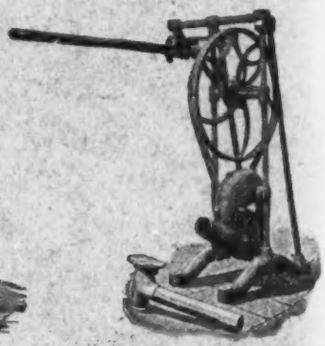

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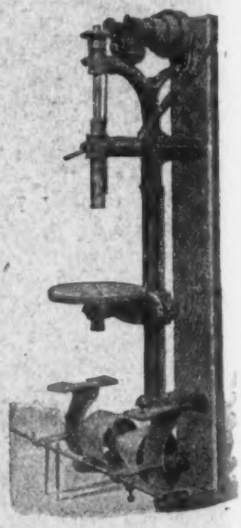

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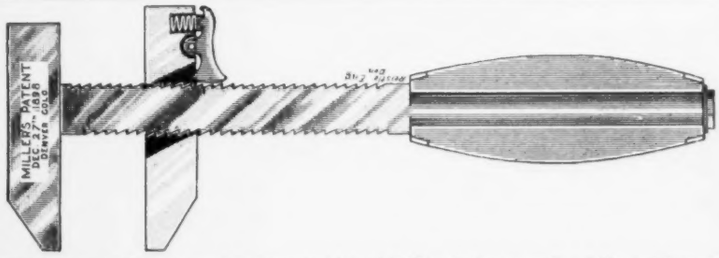

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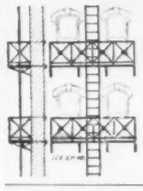

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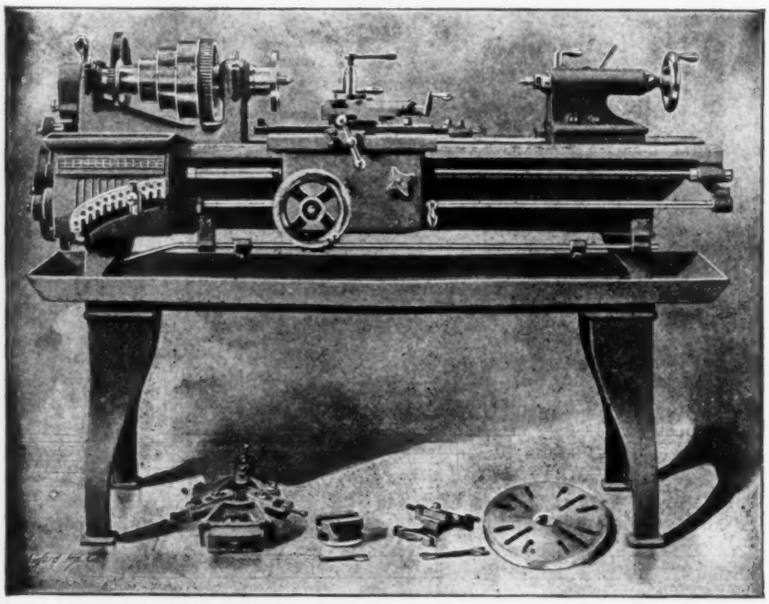

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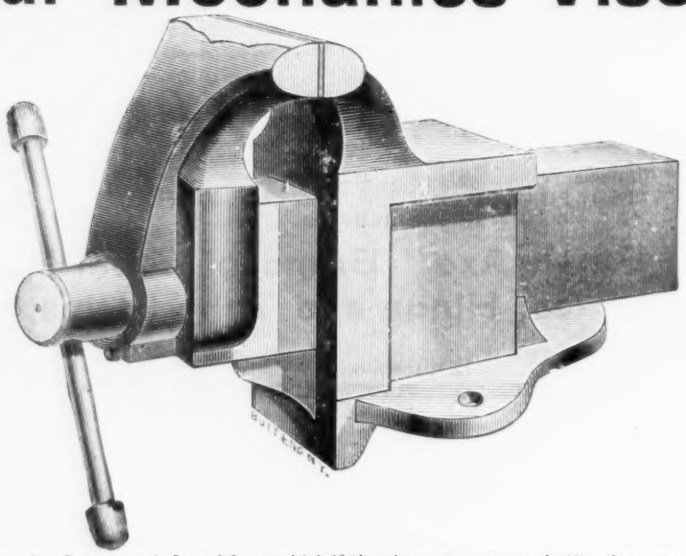

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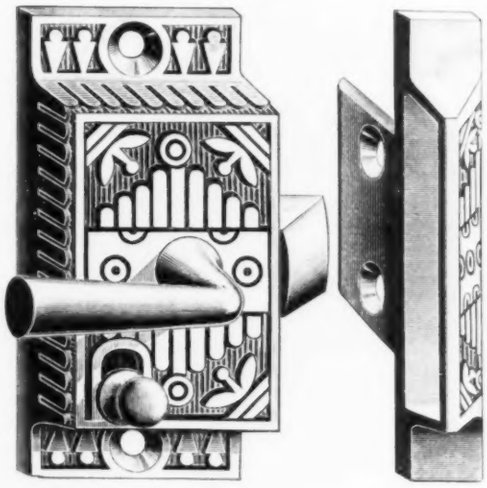

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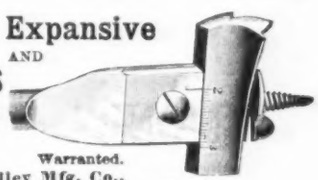

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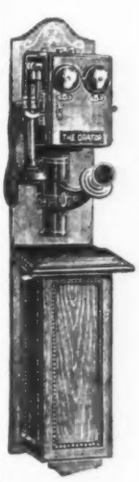

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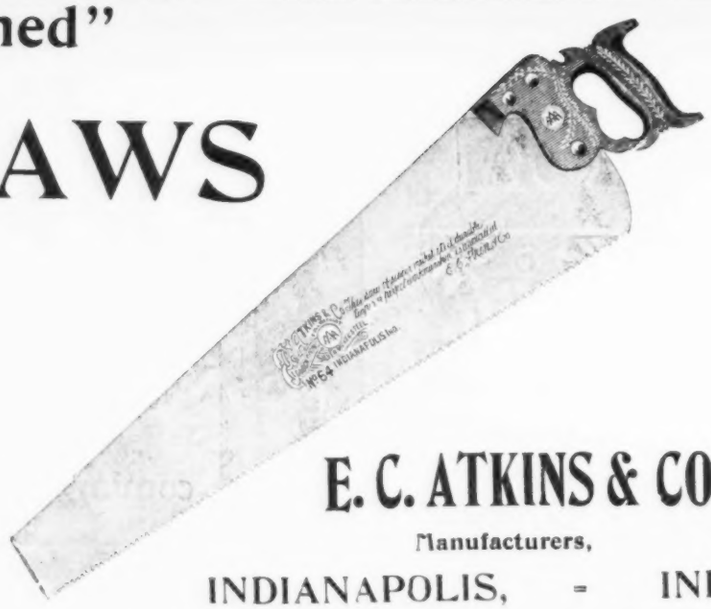

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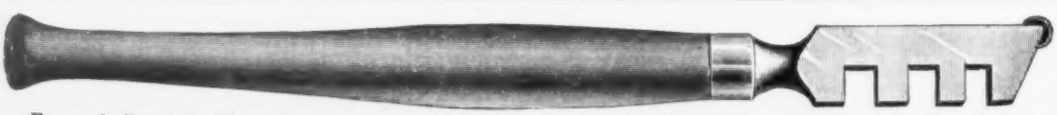

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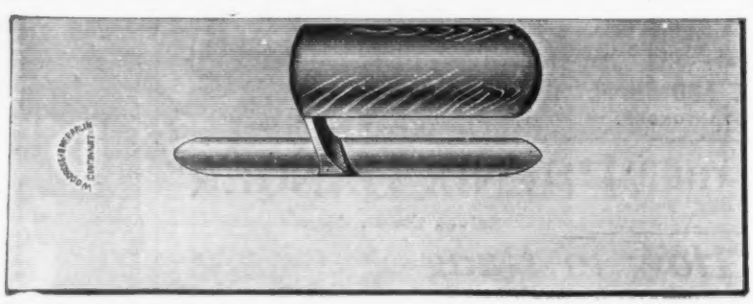

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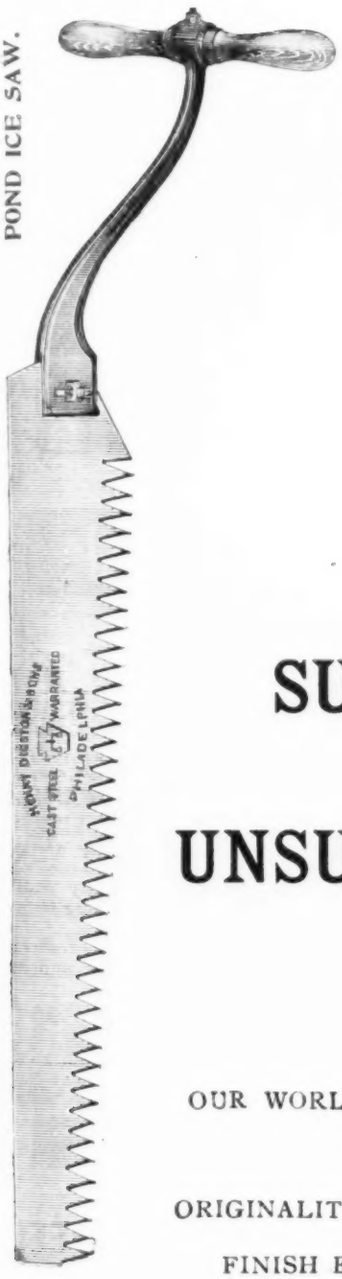

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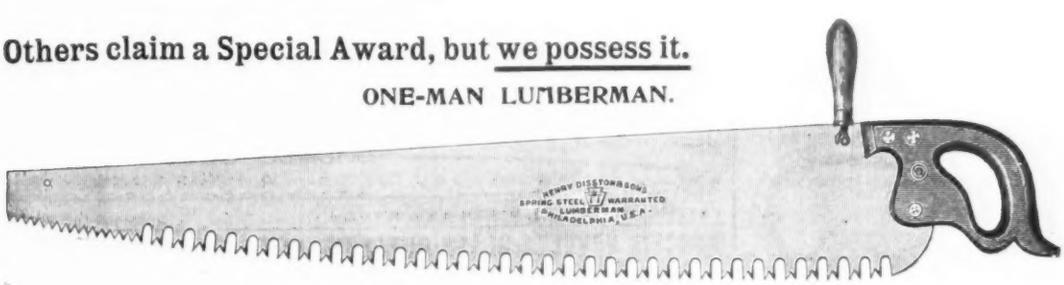

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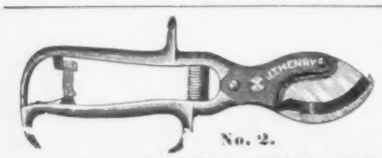

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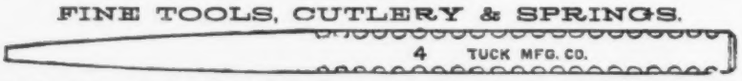

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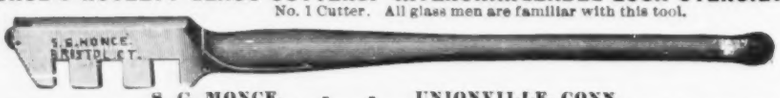

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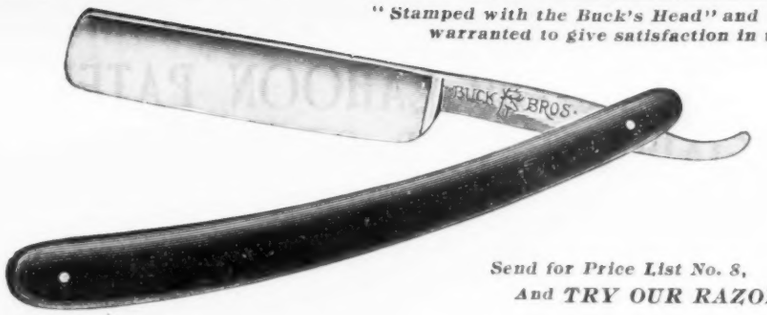

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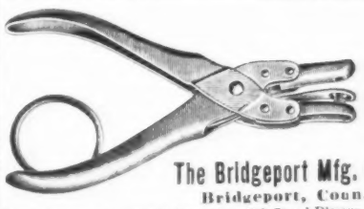

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BUT in all the wide, wide world with its remarkable achievements in the manufacturing line, there is as yet no make of **Silver Plated Ware** that can rightly lay claim to having reached the height of perfection attained in ***Rogers Anchor Brand.***

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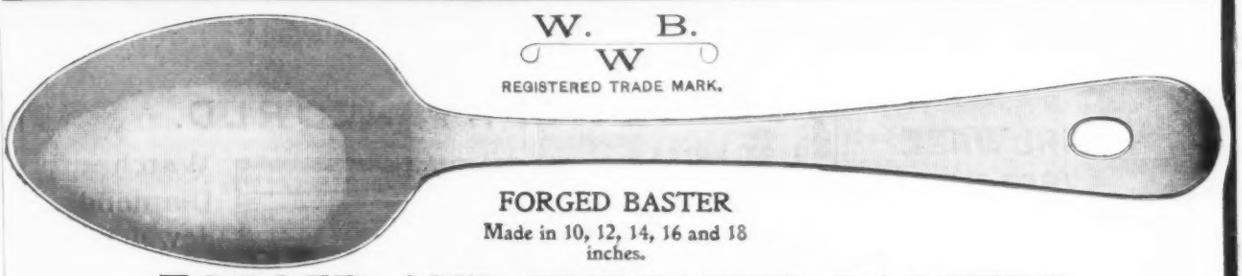

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Made in 10, 12, 14, 16 and 18 inches.

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Nickel Plated Copper Tea Sets.

Sugar Bowl, Cream Pitcher and Spoon Holder.
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CLOSES INSIDE THE BARREL,
NOT A PARTICLE OF LIQUOR REMAINING IN BODY OF FAUCET.

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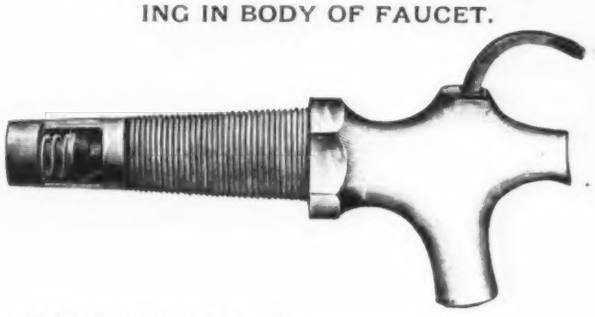

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A 50c STROP FOR 25c. ! ! !

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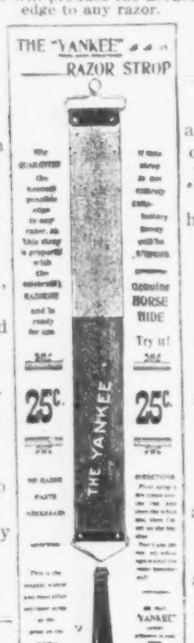

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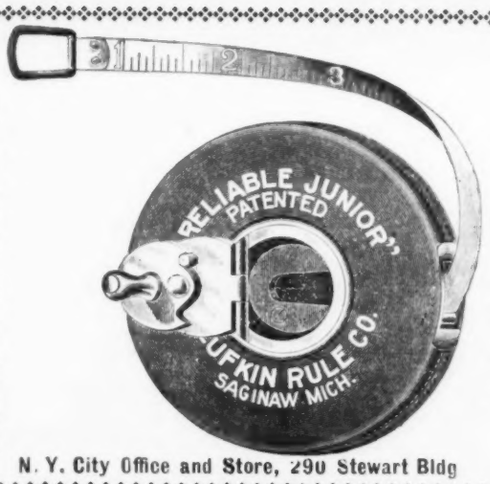

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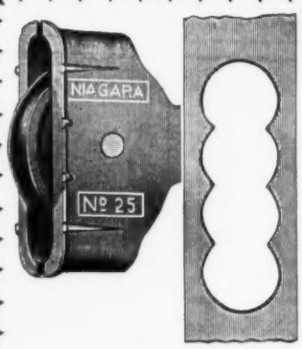

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In Several Styles.

"NIAGARA," "STAR," "ACME," and "GEM" FRAME PULLEYS.

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CASTERS, WELL WHEELS, HAYFORK PULLEYS, HATCHETS, HAMMERS, HOOKS, THUMB LATCHES, SASH LIFTS, DRAWER PULLS, CHEST HANDLES, FLORAL TOOLS, IRON PENNY TOYS, &c., &c., &c.

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HARDWARE AND HOUSEHOLD SPECIALTIES

Dont you want some goods in our line.

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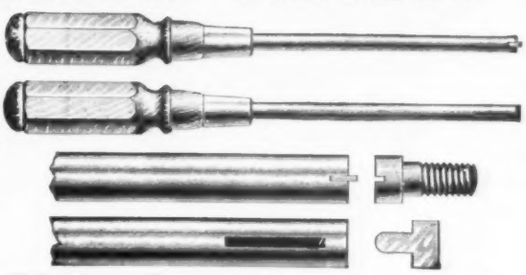
Buy a stock; put them in sight; they sell themselves. It does not take a good wood or metal worker three minutes to find out they are just what he needs. Up-to-date tool dealers carry them in stock.



They do not slip and mar the work or slice the fingers.

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They are sure to give satisfaction.

A handsome lithographed metal sign shipped with the first order of one dozen each size.

PRICE. (Discounts to the Trade.)

¼ inch	each $0.35	Per Dozen	$3.60
5/16 "	" .45	" "	4.80
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Expert designers hardware shelving and correct arrangement of stock.

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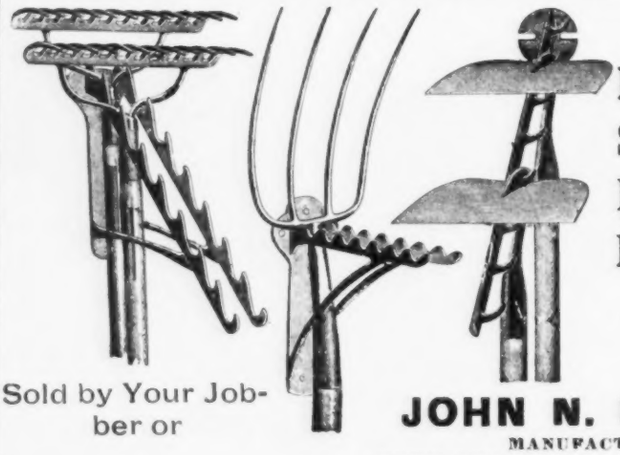

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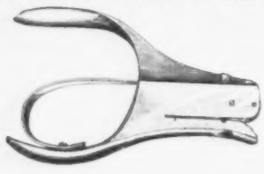

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There are good bits made for **hard wood.** The L'Hommedieu Ship Bit is an excellent tool for this purpose, but it is not designed for fine cabinet work or soft wood. There are good Bits for Soft Wood, but fail when used in **hard wood.** We have combined two principles in one, and think we have solved the problem of putting a bit on the market that is suitable for all around use Price-lists and samples furnished on application.

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ARE SMOOTH, GOOD QUALITY, NEATLY MADE, MODERATE PRICE.

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A great improvement on any truck of its kind ever offered. Will handle with equal facility boxes, tubs, barrels, or bundles Should be on sale by all dealers in hardware and house furnishing goods. Sample orders and correspondence solicited.

The price of this Truck makes it a seller with a good profit

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A CARD.

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and now to begin: They are furnished in four grades, from $1.00 to $1.75 Retail, and from $9.00 to $14.40 Doz. Wholesale. Hardware trade in 1898 sold over 300,000 of them. Better let us send you samples.

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ACCURATE GEARS.

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With above we furnish 6 drills, 1-16 to 9-64 inch.

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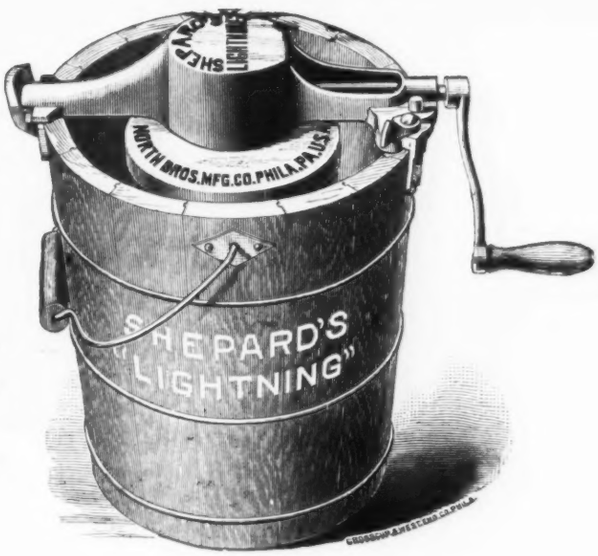
HAVE AUTOMATIC TWIN SCRAPERS

which Insure Positive and Continuous Scraping of Frozen Cream from Side of Can.



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GUARANTEED NOT TO FALL OFF OR BREAK.

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GUARANTEED NOT TO FALL OUT OR LEAK.

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FREEZERS.

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New (1898) Catalog Mailed on Application.

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No. 2, Japanned - $3.50 each.
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LIBERAL DISCOUNT TO THE TRADE.

MOST perfect knife sharpener made. Easily operated and quick work. The degree of perfection attained by the use of this machine is far superior to that accomplished by the ordinary method of hand work.

These machines are practical, based on correct mechanical principles and have reached their present state of perfection after many years of experimenting.

They are simple in their construction, very durable, and sharpen with great rapidity. Knives keep their proper shape and last much longer when sharpened with the "Universal" Machine. Silver-plated knives can be sharpened without damaging the blade.

Every dealer and every family should have one of these machines.

We guarantee the "Universal" Machine to be as we represent it, practical, convenient and perfect.

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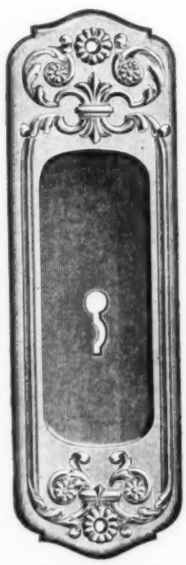

ESCUTCHEON
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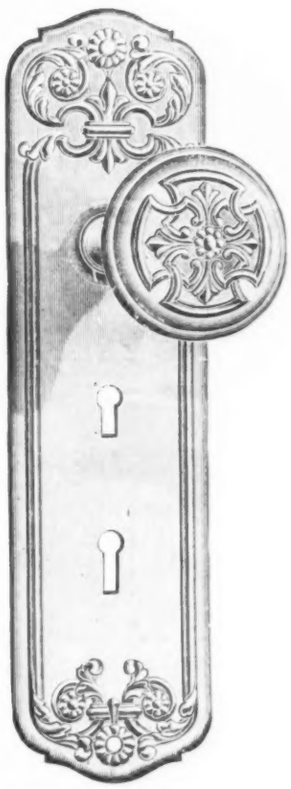

KNOB No. 951.
ESCUTCHEON No. 906.

KNOB No. 951.
ESCUTCHEON
No. 935.

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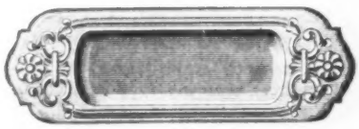

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IRON and BRASS, WOOD and MACHINE SCREWS.

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FITCH SASH LOCKS.

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Repeated endorsements by representative Architects and Builders everywhere insure a ready sale by the Hardware Dealer.

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Give them a trial. Small and large sizes in all finishes. Catalogue and price on application. Sample Free.

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ROLLED BLADE.

The line is up-to-date in all respects, and meets the wants of all users, in Price, Quality and Style.

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Order from your Jobber; if he cannot supply you, write to

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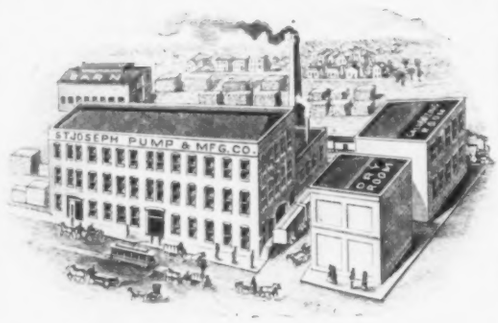
And take no SUBSTITUTE or the "something just as good."



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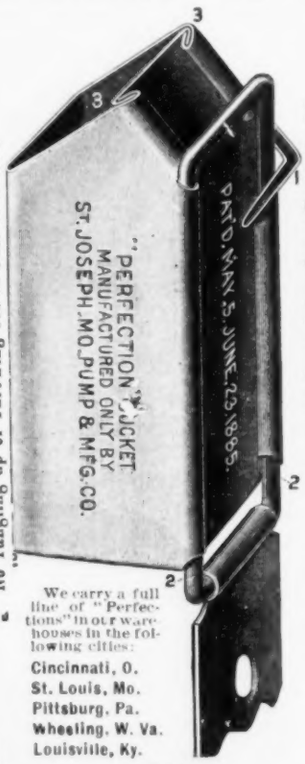
Received Highest Award and Gold Medal in competition with the world at the great Trans-Miss. Exposition in 1898. For 13 years the leader and will always continue.

Guaranteed to purify the **FOULEST WATER** in **any well** or cistern or **money refunded.**



No Tangling up or Throwing out of Bottom Wheel.

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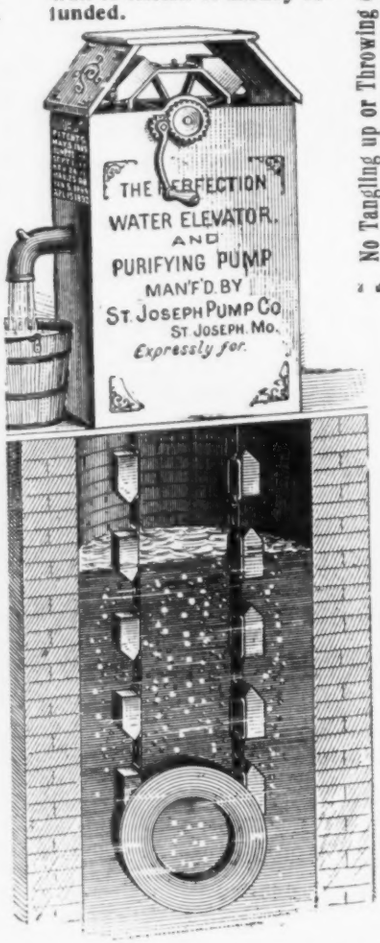

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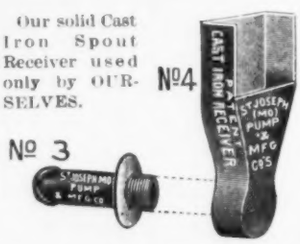
Some Jobbers and Manufacturers will offer you goods saying they are just as good as the Perfection. Why, because their profit is greater on the "Just as good" article; but do not be fooled or deceived.

Celebrated and World Renowned on Account of Its Perfect Qualities.

There may be other elevator pumps, but not one of them can compare with the "Perfection." Our one piece steel bucket, folded together by double lap seams (see cut) and connected with our corrugated steel flat sprocket link (true running), both galvanized after construction, makes a chain that will last a natural lifetime. Our curbs are decorated handsomely and are superior in material, workmanship and finish to anything on the market. Our fixtures are extra heavy, and including our solid cast iron bottom wheel, and our latest improvement, namely, our solid cast iron combination spout and receiver (a feature no other elevator has), makes our pump, as its name implies, "Perfection," and sold at about the same price as inferior goods.

Our solid Cast Iron Spout Receiver used only by OURSELVES.



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Non-Freezable in the Coldest Climates.

Send all orders direct to St. Joseph, Mo.

Write us for terms, prices and BOOK ON IMPURE WATER, addressing

St. Joseph Pump & Mfg. Co.

Sole Manufacturers,

ST. JOSEPH, MO., U. S. A.

It is the simplest structure for raising water on the continent.

Guaranteed to purify the foulest water in any well or cistern and keep it as pure as a mountain stream.

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Thorough satisfaction.....

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Garden

Hose

Our samples, catalogue and quotations will interest the dealer who desires to handle high grade, reliable Rubber Hose,—the kind that will bring satisfied customers back to his store to purchase a second time in years to come.

BOSTON BELTING CO.

James Bennett Forsyth, Mfg. Agt. & Gen. Mgr.

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MECHANICAL RUBBER GOODS.

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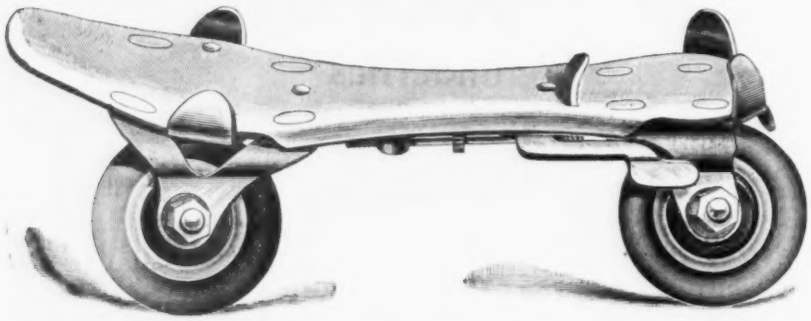
Foot Cycle Roller Skates.

VULCANIZED RUBBER WHEELS.



WITH PLAIN BEARINGS OR WITH ROLLER BEARINGS.

As FASCINATING as RIDING a WHEEL.

UNION HARDWARE CO.,

TORRINGTON, CONN.

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CAUTION!! Be careful to get the genuine TOWER'S CHAMPION SCREW DRIVERS,

Clearly Indicated by our Trade-Mark CHAMPION on Every Blade.

None others have our Solid Bolster and Guaranteed Special Quality and Temper.

Mechanics and Amateurs.

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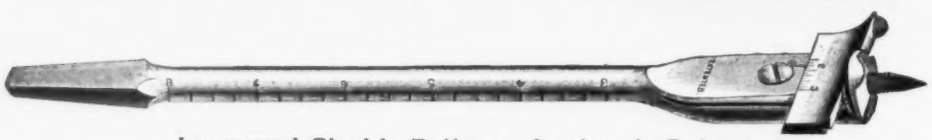
Machinists.

See that the word "CHAMPION" is on each Screw Driver.



Improved Clark's Pattern. Lavigne's Patent.

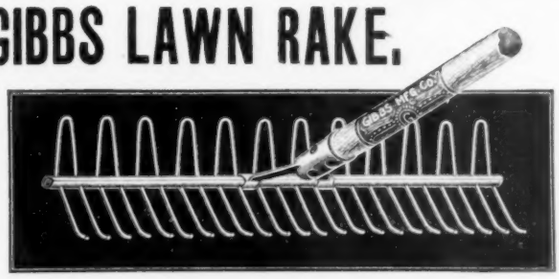
Chaplin's Patent Iron Planes

Advertise themselves by their QUALITY, STYLE and FINISH.

Both Smooth Face and Corrugated Face and Ribbed Bottom.

TOWER & LYON, 95 Chambers St., New York City.

GIBBS LAWN RAKE.



The strongest, lightest and finest looking ALL STEEL Rake ever produced.

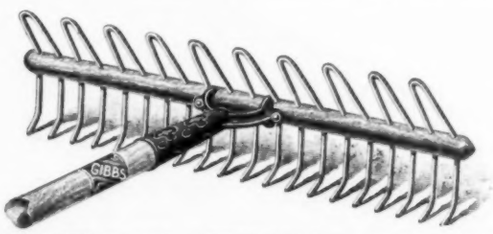
Coated with Pure Block Tin.

Note the bend of the teeth — makes raking easy, does better work, and won't tear up the sod. One of the special features of the "Gibbs Rake."

We represent and offer the largest assortment of the very best make of

Lawn Rakes and Post Hole Diggers

on the market. Write to-day for illustrations and prices.



"MODEL" and "OHIO-GIRL" Lawn Rakes.

The success of the "NEW COLUMBIA" DIGGER is its simple and durable construction with less liability to breakage.

It works perfectly, gives entire satisfaction and costs no more than inferior goods (if as much).

"COLUMBIA."

SELLING AGENTS:

JOHN H. GRAHAM & CO., 113 CHAMBERS ST., NEW YORK.

The "Security" Cash Recorders.

Styles Nos. 100 and 92.
16¾ in. wide, 19½ in. deep, 10½ in. high.

Styles Nos. 95½ and 95.
17¾ in. wide, 19½ in deep, 10½ in. high.

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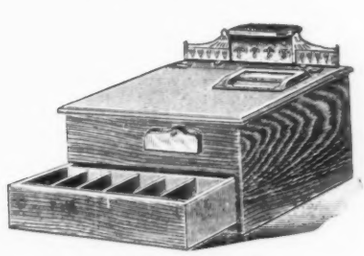
17½ in. wide, 19 in. deep, 10¼ in. high.

Styles Nos. 82 and 90.
17½ in. wide, 19 in. deep, 10¼ in. high.

No. 92 All Nickeled.



1899 Comet.

MANUFACTURED BY

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Catalogues and Price-Lists Mailed on Application.

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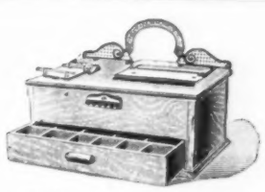
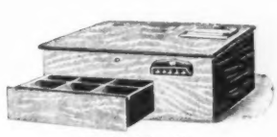


Styles Nos. 75½ and 75.
22½ in. wide, 17¾ in. deep, 10¾ in. high.

Style No. 70.
22½ in. wide, 19 in. deep, 8½ in. high.

Style No. 22.
22½ in. wide, 19 in. deep, 8½ in. high.



Style No. 3.
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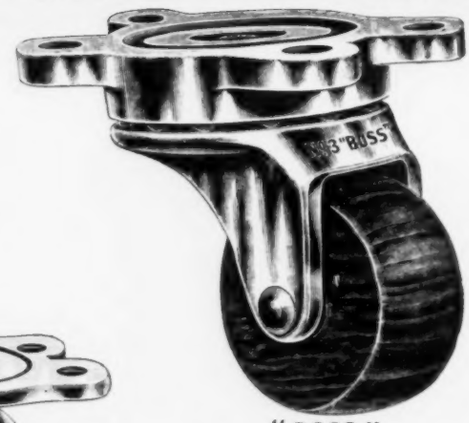
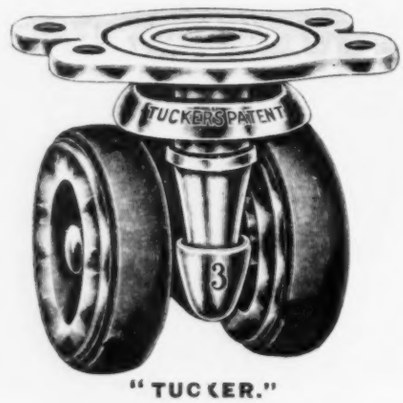
IN ANTI-FRICTION CASTERS.



"BOSS."

A Hot Line.



"TUCKER."

NEW CATS. FOR 1899.

"MARTIN."

LARGE, BIG, LITTLE AND SMALL SIZES.
ROUND, OBLONG, STEM AND OTHER PLATES.
IRON, WOOD AND LEATHER WHEELS.

TUCKER & DORSEY MFG. CO.,

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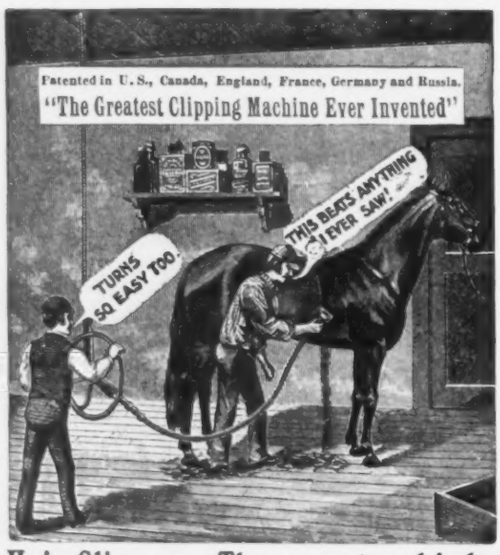
"SEE THE HAIR FLY. NOW IS THE TIME"



Hair Clippers. There are two kinds—

"Hair Clippers" and "Hair Pullers." If you want "Hair Pullers" ask for "any old kind." If you want "Hair Clippers" insist on the "Stewart Patent." There's no other "just as good." They will cost you no more than the "inferior kind." Each part is absolutely interchangeable; each Clipper is warranted to cut perfectly. We have just been awarded Gold Medal at Trans-Mississippi Exposition, highest and only award for horse clipping, sheep shearing, and cattle grooming machines.

For the New '98 Chicago Clipper.

Retails for $8.75.

"Known the world over" as the "Greatest Clipping Machine ever invented." Patented in the United States, Canada, England, France, Germany and Russia. Holds World's record for fast horse clipping. Time, 14 minutes. All enterprising hardware men can sell this machine in place of the old fashioned two-hand variety. Can be set up in one minute in any place by any one. Thousands of testimonials from well satisfied customers. Weight of machine, 35 pounds; boxed, 55 pounds. The day is gone by when a man will spend half a day clipping a horse when it can be done w th the new '98 Chicago Clipper in as short a space as 14 minutes. Get in line. Send for a catalogue.

"STEWART PATENT."
Most Highly Finished Clipper Made.

Send for catalogue of "Modern Clippers."

CHICAGO FLEXIBLE SHAFT CO., 158-160 Huron St., CHICAGO, ILL., U. S. A.

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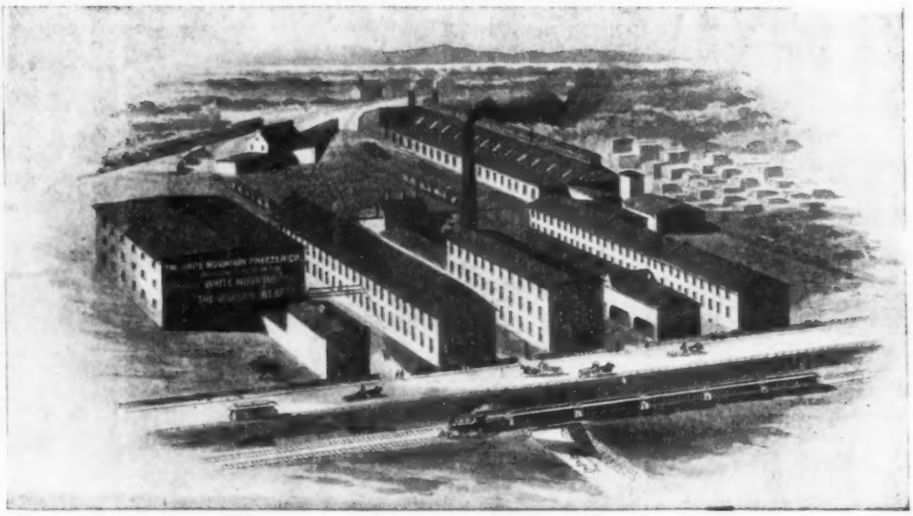
Freezers ONLY We Make.



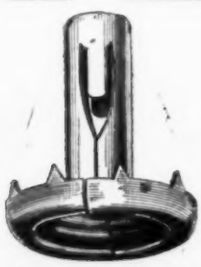
Freezers ONLY We Sell.

We study the FREEZER business and nothing else. The *WHITE MOUNTAIN FREEZER* of to-day is the best possible product of skilled workmen, fine materials, careful construction, and excels in these selling points:

APPEARANCE—ECONOMY—WEAR AND TEAR—QUICKNESS OF FREEZING AND QUALITY OF CREAM PRODUCED.

Why not sell the BEST? If you have any doubt about there being *MONEY FOR YOU IN HANDLING THEM*, write at once for information and prices.

THE WHITE MOUNTAIN FREEZER CO., Nashua, N. H.

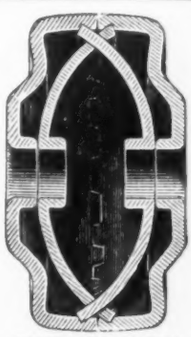


TRACK PLATE SOCKET.

Experts Disagree on almost Everything,

BUT WHEN THE SUBJECT TOUCHES UPON THE SUPERIORITY OF

STANDARD BALL-BEARING CASTERS



SHOWING CONSTRUCTION OF OUR HOLLOW WHEEL.

There is but one opinion, and that is that they are the

BEST CASTERS MADE.

BALL BEARING PLATE CASTER.

If your jobber does not handle them write direct to

Standard Caster and Wheel Co.

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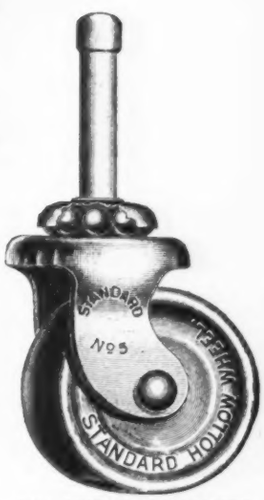
Canadian Agents: H. R. Ives & Co., Montreal, Canada. Kindly write to them for samples and prices on all Canadian business.



BALL BEARING STEM CASTER FITTING STANDARD TRACK PLATE SOCKET.

PATENTED ROLLING LADDER SYSTEMS.

ADAPTED FOR ANY KIND OF A STORE.

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Neat, Noiseless, Easy Running, Rubber Tired Wheels.

Every shipment subject to 30 DAYS' TRIAL.

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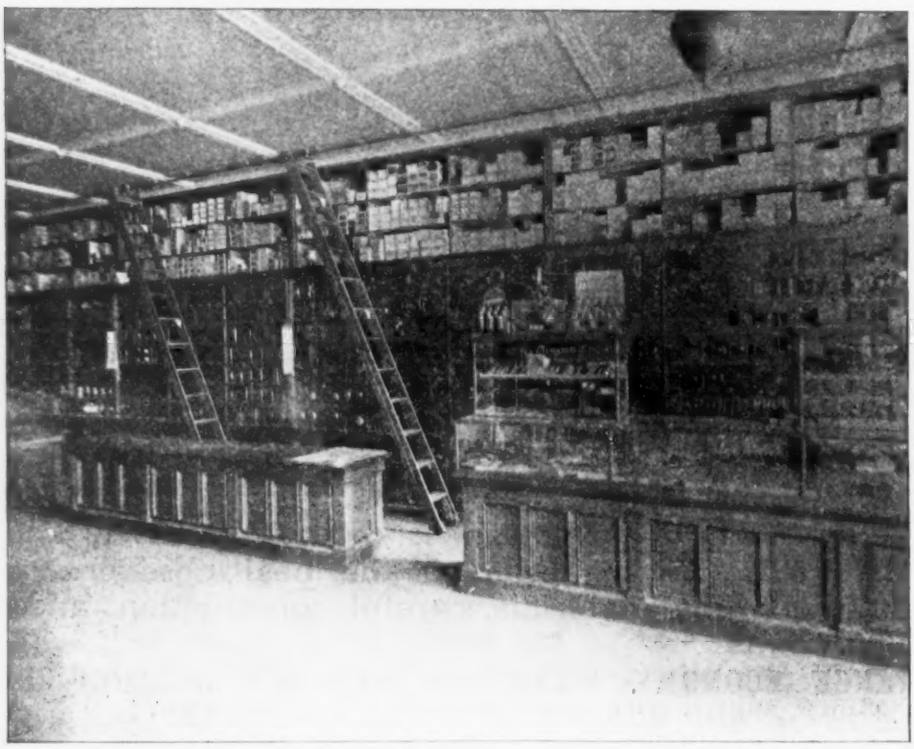

60,000 Sets of *Coburn Hangers* sold in 1898.

PARLOR, BARN, CAR and FIRE DOORS.

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COBURN TROLLEY TRACK MFG. CO.,

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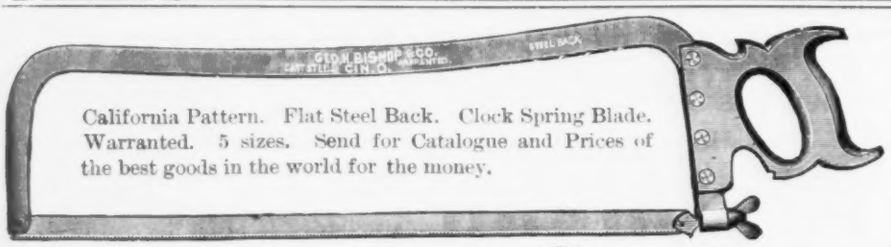

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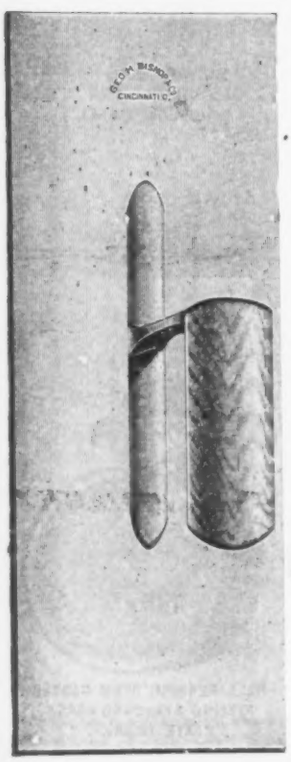
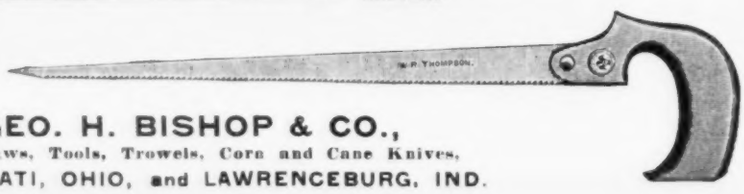


TRUSS FRAME WOOD SAW, No. 44.

No weak Points, no Stretching Rod to Break, no threads to strip, can be strained to any required tension, cannot rack on the Joints, Crossbars cannot carry sideways, Blades can be removed without taking frame apart and many other good points are to be found in this Saw. Write.



GEO. H. BISHOP & CO.,

Mfrs. Saws, Tools, Trowels, Corn and Cane Knives,

CINCINNATI, OHIO, and LAWRENCEBURG, IND.

"Rapid" Coffee Grinders and Pulverizers

No. 2½, $4.50

No. 5, $8.00

Sef-Priming and Measuring Pump

No. 97 Pump and Auger, $5.00

Enterprise

Patented Hardware

Specialties

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The Rapid Grinding and Pulverizing Coffee Mills are the only Mills made that Pulverize Perfectly. Thirty sizes and styles from $1.25 to $50.00.

The Old Reliable **Meat and Food Choppers** are superior to any in the market, and dealers make no mistake when they carry a line of them in stock.

Order through your Jobber.

Send for Illustrated Catalogue, describing these and many other articles.

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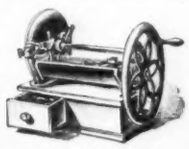

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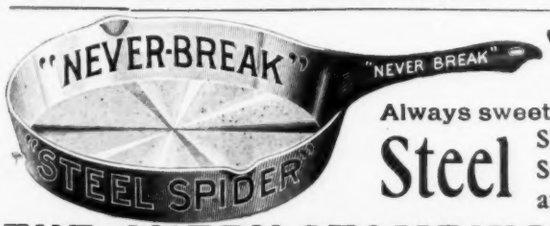

"NEVER-BREAK" Best Finished Goods Made.

Always sweet and clean. **Steel** Shovels, Scoops, and Spades.

FULL WEIGHT. Will not absorb grease. STUBBS GAUGE.

Spiders, Kettles, Griddles, Stew Pans, Scotch Bowls, HIGHLY POLISHED AND TINNED.

ORIGINATORS OF STEEL HOLLOW WARE.

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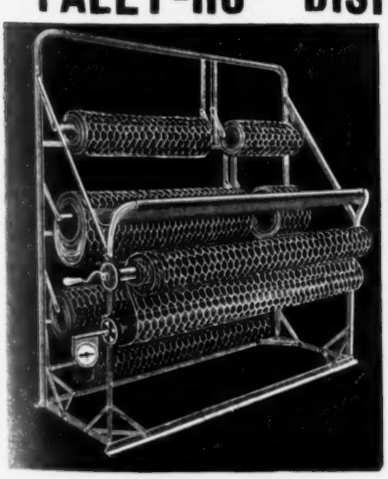
"TALLY-HO" DISPLAY RACK AND MEASURING MACHINE



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Arranged for conveniently measuring, winding and handling **POULTRY NETTING**

The MEASURING AND HANDLING OF POULTRY NETTING has been a most trying and vexatious problem. The "TALLY-HO" has solved the long vexing question of how to measure the stubborn stuff. It is needless to enter into the details of all the disagreeable annoyances attending the retailing of an article that is growing in demand each year. You know what they are, and a description of the machine will show you that they are all overcome and that the selling of any number of feet, of any width, can be done in a few minutes by one person with pleasure instead of trial and trouble.

The machine is made of GALVANIZED IRON, occupies only 28 INCHES by 80 INCHES floor space and is 70 INCHES HIGH, and holds one bale each 12, 24, 36, 48, 60 and 72 inch netting.

ITS CONSTRUCTION is on STRICT MECHANICAL PRINCIPLES, and with ordinary usage it WILL LAST A LIFE TIME.

It winds the netting compactly while measuring, and the rolls are easily tied and ready for delivery.

It provides a place where netting is always in view, and makes a display of what under the old way is a ragged looking lot of cut pieces always in the way.

It saves much waste in taking care of small pieces. It saves time and the annoyance of carrying the bales out to the street to cut and measure.

IT IS GUARANTEED to do the work claimed for it, and embodies every need for rapid and easy handling of poultry netting.

These are facts that will merit and command your attention.

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MATTHEW BURTON, Manufacturer,

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W. R. OSTRANDER & CO.,

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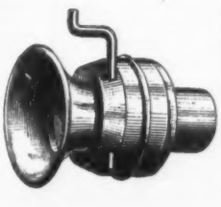
Manufacturers of

SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.

Complete outfits of Speaking Tubes, Whistles Electric, Mechanical, and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory DeKalb Ave., near Knickerbocker, Brooklyn, N. Y.



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ENGRAVER AND DIE SINKER,

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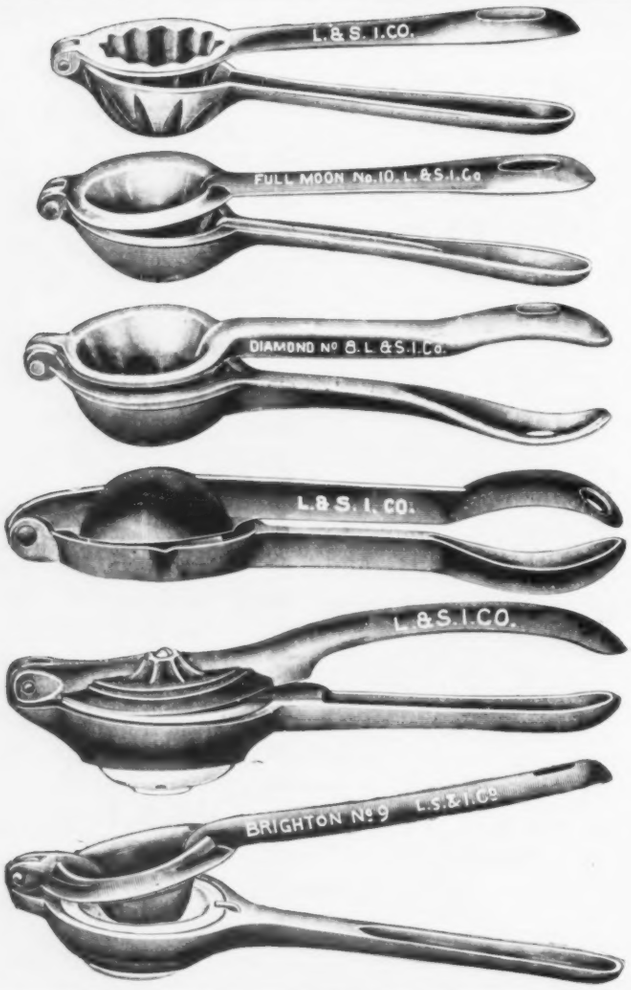
Steel Letters and Figures, Burning Brands, Stencils, &c.

MACHINE ROUTING FOR THE TRADE.



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OF LEMONS, LOOK!

Here are six kinds of Lemon Squeezers—we make six others. Have all kinds to suit everybody. They are the best and cheapest Squeezers made.

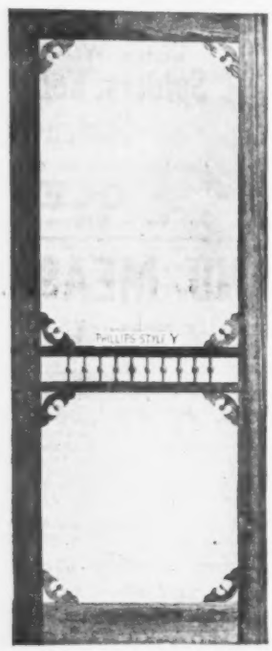
All who sell squeezers and don't buy ours, lose an opportunity for profit.

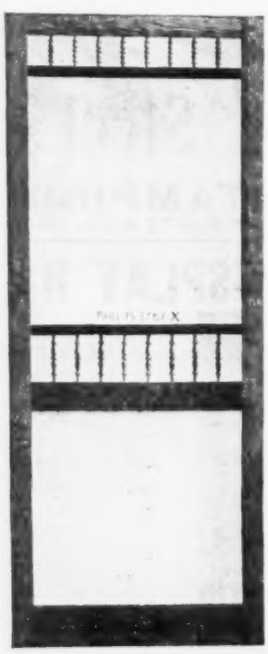
Also ICE GOODS, SHREDDERS, PLANES, PICKS, ETC. . . . .

It costs but a penny to ask and receive valuable information. Let us hear from you.

Logan & Strobridge Iron Co.,

New Brighton, Pa., U. S. A.





Notwithstanding the amateur prices in vogue (1 doz. for 2 pins, 2 doz. for 3 pins, &c.), they are not made from the scrap heap nor in a kindergarten school.

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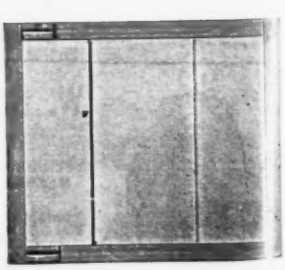

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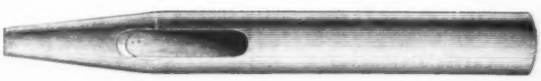

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Bench Stops, Punches, Cutting Pliers and Car Sealers.

THE NO. 1 SAW SET.

TRADE MARK

Registered, Pat. No. 30572.
This Trade Mark is stamped on all Hardware Specialties of my make.

TRADE MARK

Registered, Pat. No. 30572.
This Trade Mark is stamped on all Hardware Specialties of my make.

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In all Sizes and Shapes.

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Builders' Hardware

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"ONLY TWO PARTS TO CLEAN."

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No. 10 and 12 are especially adapted for Butchers.
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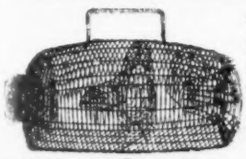

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Our daily orders are from the leading dealers all over the country from Maine to California.

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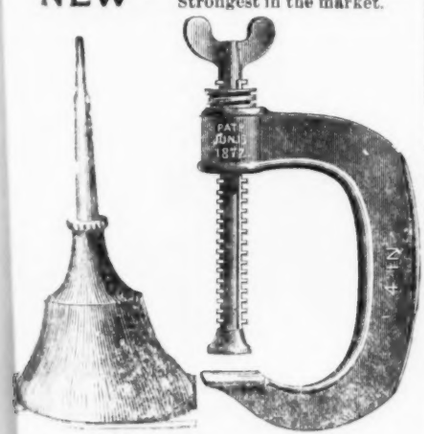
NEW pattern Heavy Screw Clamps. Strongest in the market.



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HAMMER'S MALL. IRON HAND LAMPS.
HAMMER'S M. I. HANGING LAMPS.
HAMMER'S ADJUSTABLE CLAMPS.

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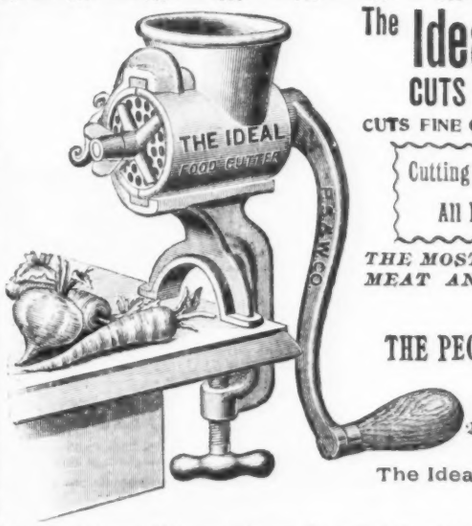

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CUTS EVERYTHING EDIBLE.

CUTS FINE OR COARSE JUST AS NEEDED.

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All Parts can be Duplicated.

THE MOST SATISFACTORY FAMILY MEAT AND FOOD CUTTER EVER MADE.

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Screwdrivers, Can Openers, &c. Sheet Metal Punching and Nickel-Plating. Mill Supplies. Steel Springs of all kinds.

Warm Your Feet

Sells Because

It appeals to the Comfort of your Customer.

PRACTICAL

people buy it at sight.

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U. S. SPRING CLOTHES PIN.

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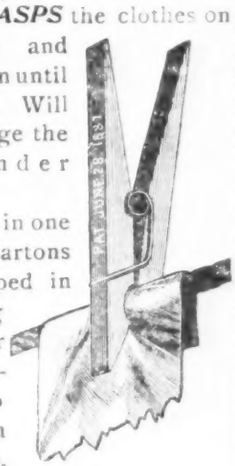
Packed in one gross cartons and shipped in strong cases for transportation to foreign countries.



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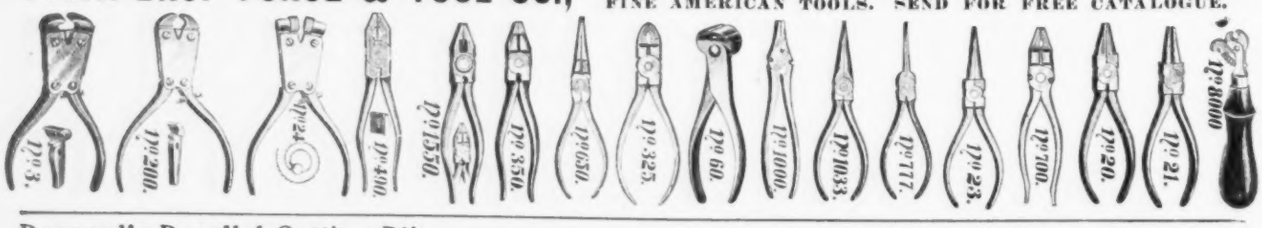

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Retailed from 10 to 25 cts., according to size.

Made in four sizes, with or without cutters.

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NOW IS THE TIME TO PURCHASE YOUR SPRING STOCK OF

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MAYHEW'S Brand is **superior** to all others for this work, because of the rapidity with which they bore. These bits are carefully made and properly tempered, and **warranted THE VERY BEST.**

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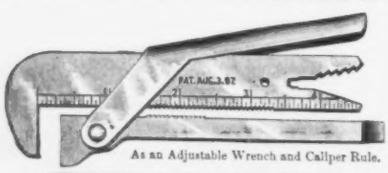
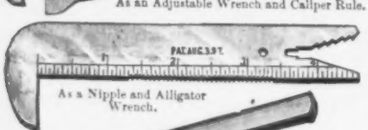


As an Adjustable Wrench and Caliper Rule.



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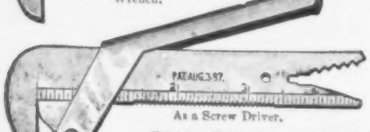

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Quickly Adjusted.
Perfectly Rigid.
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Good as can be made.
Weight, 4½ oz.

Sample in Leather Pocket, by mail, 30 cts. List Price, $3.00 doz.

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Warranted to be the BEST MADE and STRONGEST WRENCH in the MARKET.

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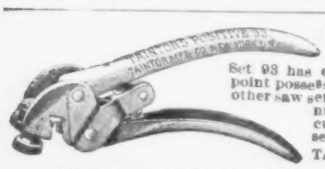

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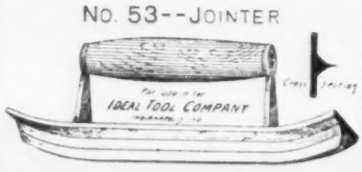

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Imprint Rollers, Driveway Groovers Bevel Tools, Concrete Cutters and Jointers, Tampers, Radius Tools, Quarter Rounds, Combined Curb and Gutter Tools, Curb and Gutter Form, Trowels, Name-Plates and Stamp. Our Tools are made of Bell Metal and Bronze. Will not corrode. Satisfaction guaranteed. Send for Cat and Discounts.

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We supply

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During the past half century

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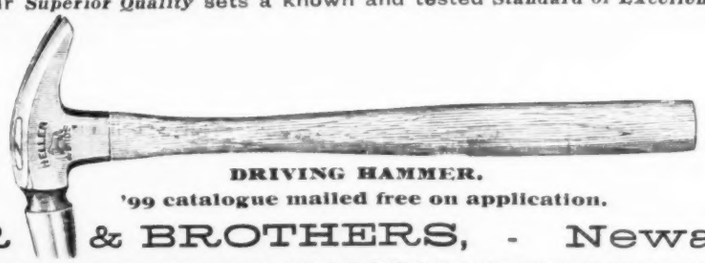
Have been steadily *improved* in manufacture, kept constantly up to date and *abreast with the times.* Their *Superior Quality* sets a known and tested *Standard of Excellence.*

Made from our own production of *Clay Crucible Steel.*



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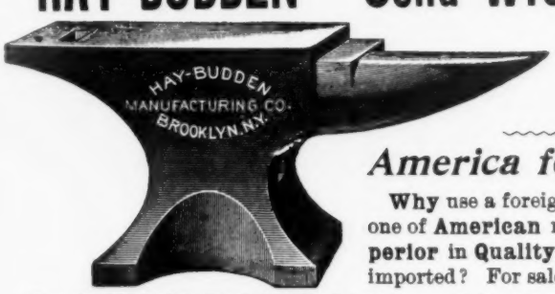

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America for Americans.

Why use a foreign Anvil when you can get one of American manufacture, which is Superior in Quality, Form and Finish to any imported? For sale by all dealers.

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Die and Steel Forgings.
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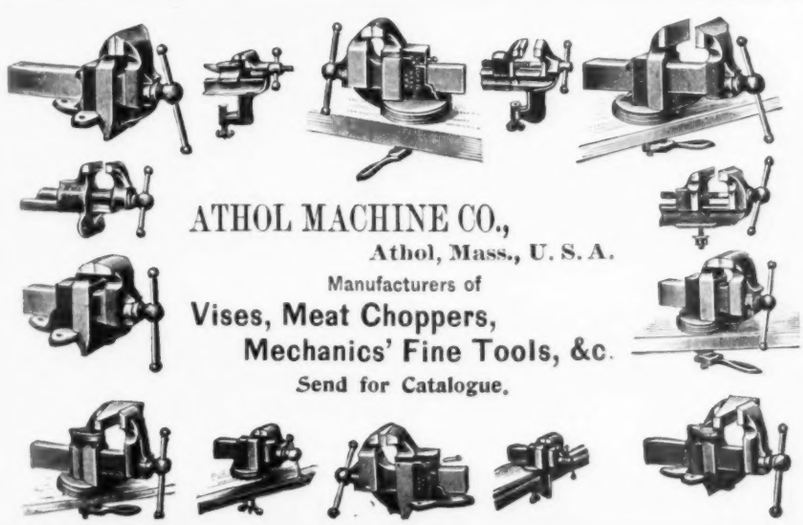
Our steel is made expressly and solely for us. Dies forged under our system will cut 10 to 25% more blanks than others before regrinding.



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Arcade files are made from the very best Crucible File steel, and are guaranteed to cut faster and wear longer than any on the market.

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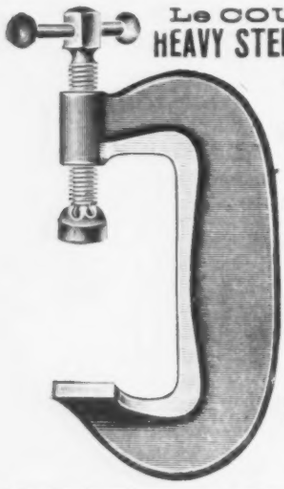

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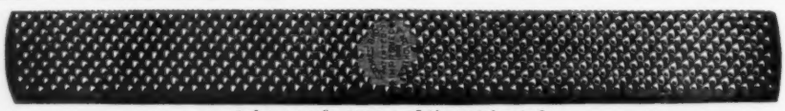

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ARE ADJUSTABLE.

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The Best made for bicycle stores, public buildings, offices, stores, churches, schools, factories, in fact anywhere. Wall and floor holders. Various styles furnished in any finish. Write for prices.

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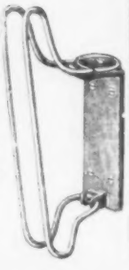

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are now all manufactured with a SOLID STEEL FRONT JAW AND SCREW MADE FROM BAR STEEL which makes them run perfectly smooth and even AND THEY WILL NOT BREAK.

These two improvements make this line of vises the best and cheapest on the market

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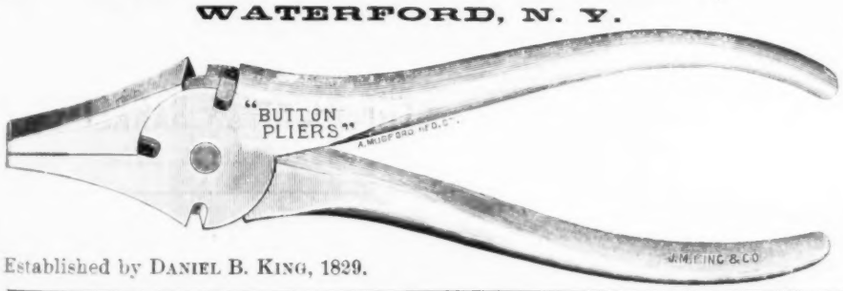

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Quickest-Acting Vise Ever Made.

Holds Frames Securely in any Position Without Injury.

Saves Time and Money and is Cheap.

SOFT LEAD JAWS. Holds ⅝, ¾, ⅞, 1, 1⅛, 1¼ Tube.

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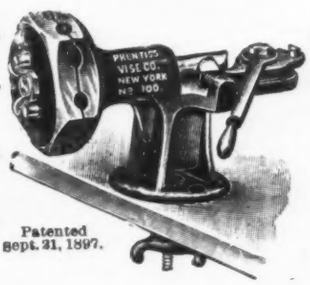

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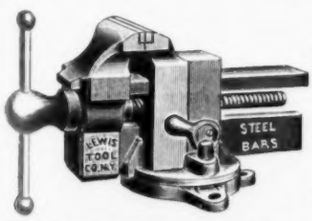
LEWIS' PATENT DOUBLE STEEL SLIDE BAR VISES.



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All Kinds of Vise Work.

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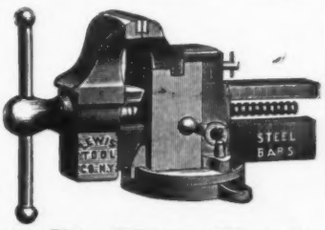

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Brazing Blowpipes, Foot Bellows.

...quarters for above. Satisfactory prices will be made ...chasers.

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Will open wide.

Will easily nip off hoofs.

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Will hold plow bolts from turning.

Construction of jaws enables the getting into corners and under nuts.

Arm A can be used as a screw driver.

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Improved key fastening, will not get loose.
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Zinc lined. Patent casters.
Galvanized iron flues, ice rack and shelves.

The shelves being so constructed that small dishes placed upon them will not tip over.

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The insulation used is ***Granite Rock Wool*** and Charcoal Sheathing.

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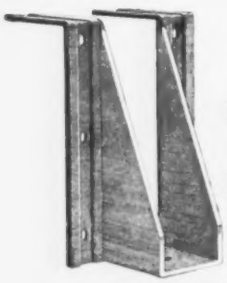
VAN DORN'S Steel Joist Hanger



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EGG BEATERS
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It has propeller-shaped wheels, and

Will Beat 6 Eggs in 40 Seconds,

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Made like high-priced ones and as perfect. Smooth and well nickeled.

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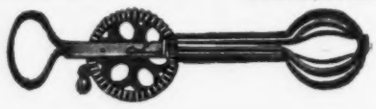

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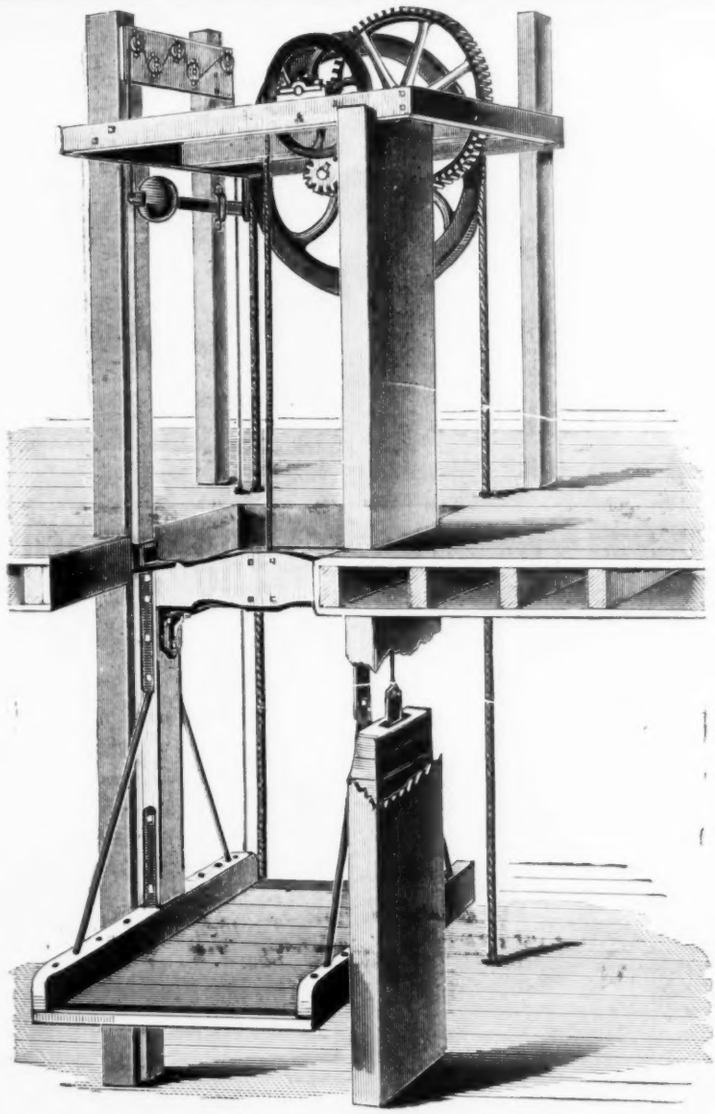
Also Machinists' Tool Chests, empty. Tool Cabinets and Work Benches. Illustrated Catalogue and prices furnished on application.



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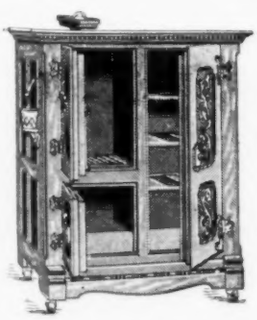

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THE FLEUR-DE-LIS LINE
LINED WITH BLUE ENAMEL

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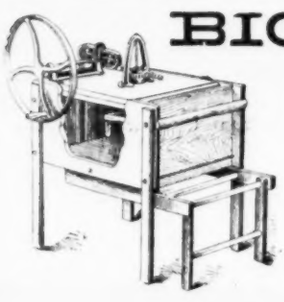
GRAND RAPIDS, : : : MICH.



BIG WASHING

Done in **TWO HOURS** with

"BENBOW ROTARY."

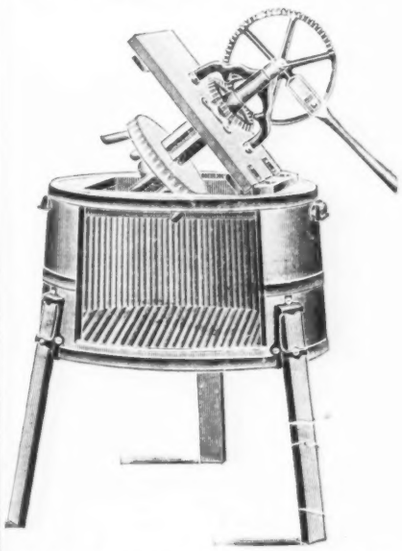
Saves Women! Saves Clothes!

The easiest in the world to operate. Fully guaranteed Send for trial machine.

BENBOW MFG. CO.,

No. 1017 N. 13th St., - St. Louis, Mo.

The Round Western.

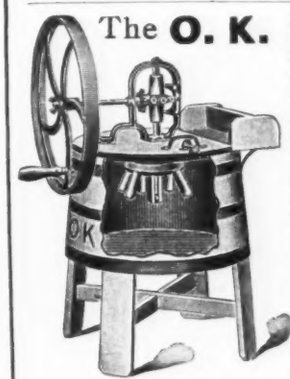


We manufacture the "Michigan" Round and Square "Western Washers," and White Pine Washtubs. Our car load prices will interest you. Sold by Jobbers, or write the manufacturers.

Michigan Washing Machine Co.,

MUSKEGON MICH., U. S. A.

The **O. K.**



Have you seen the New O. K. ROTARY WASHER with revolving Steel Ball Gearing? Best and easiest running Rotary Washer.

The large fly wheel has a broad rim, to which a belt can be attached.

Write for Circular, Price, etc to

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Cyclone Washer.

SOMETHING NEW. EVERY HARDWARE DEALER SHOULD HANDLE

Write AT ONCE for descriptive circulars, etc., to nearest agent.

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Blue Flame Oil Cook Stoves

WICK AND WICKLESS.

In seven different styles. Low, medium, and high, which for durability, simplicity, economy and convenience, are in all respects the best made.

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CLEVELAND, OHIO, U. S. A.

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The Famous "White Mountain." The World's best. Are especially adapted to the export trade.

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No 230.

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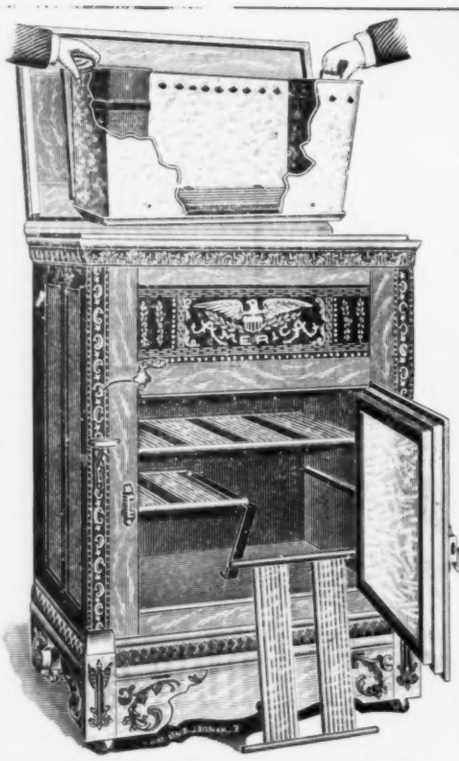
A GOOD SELLER.

ERIE SPECIALTY CO., - ERIE, PA., U. S. A.



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Perfect circulation. Patented removable galvanized steel ice compartment. Most economical in ice consumption. Absence of odors. Freedom from moisture on walls. Direct drainage to drip pipe. Divided shelf. Swinging fall board.

Order a sample to compare with the one you are now handling, and be your own judge, or send for catalogue. Our prices are right.

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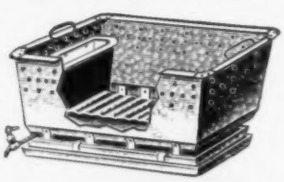
BY THE USE OF THE



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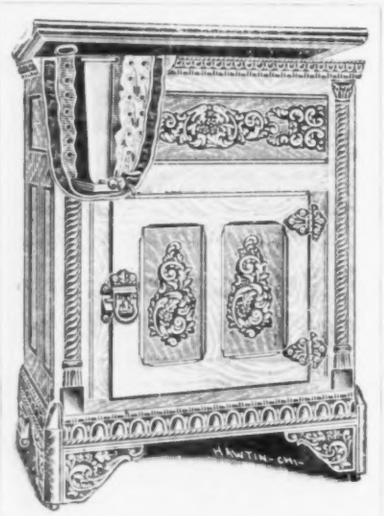
The Gurney Leads, Others Follow.



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"Savory" Seamless Roasters.

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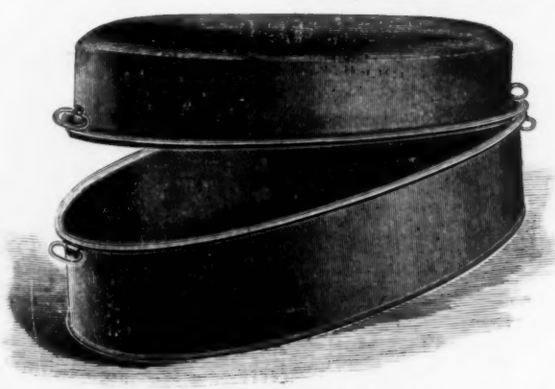

The corners and seams of the ordinary roasters get filled up with burned grease. The ***"Savory"*** is ***Seamless*** and oval and can be cleaned easily and perfectly. From a sanitary standpoint, the "Savory 'Seamless is

THE ONLY GOOD ROASTER MADE.

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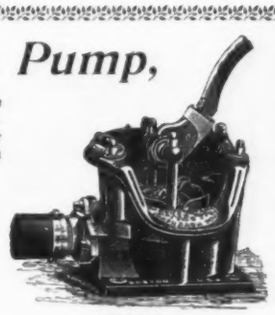

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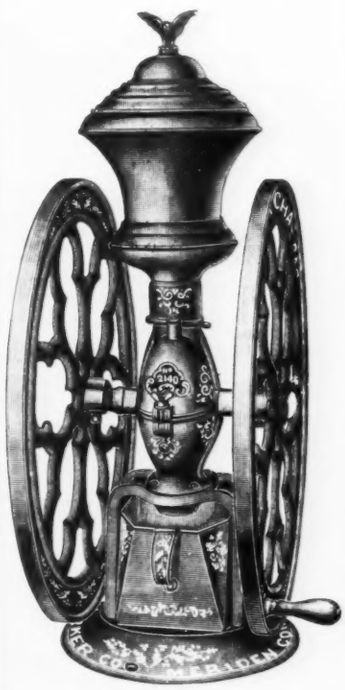

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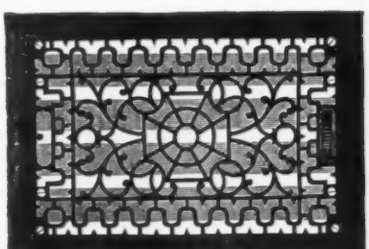

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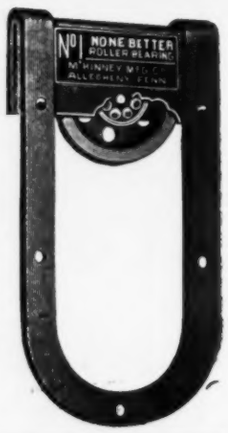

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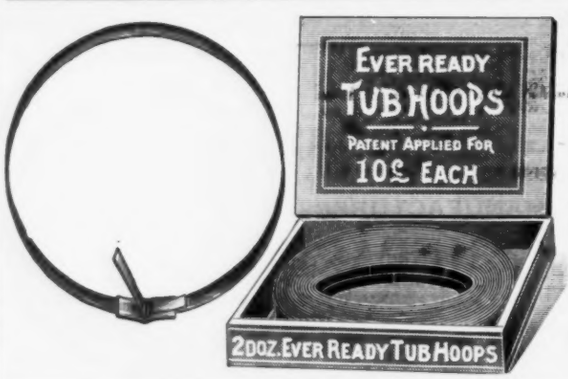

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a saving of time without loss of profit

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5 Sizes, in both plain and galvanized.

You cannot use a coupling of any kind and have the hoop fit.

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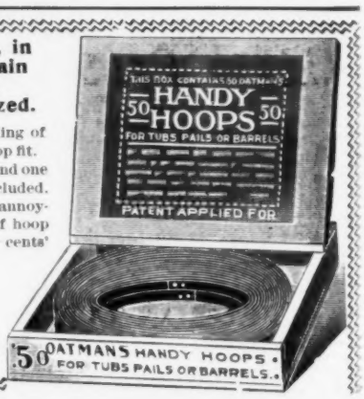

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For Emulsifying and Spraying Kerosene and Water.
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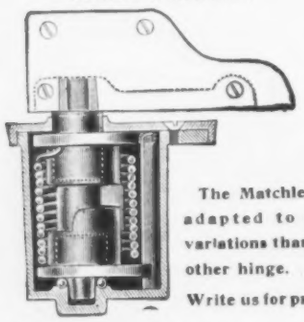

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Patent Reversible Iron Stands and Lasts, Lap Lasts, Boot Jacks, Hammers, Foot Rests, &c.

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IT'S FLAT—Won't cut the hose; mender and bands are of brass; pliers of iron, handsomely Japanned. Simple, convenient. Screw menders tear the lining and wire bands cut. Our flat bands make secure couplings and positively will not injure the hose. Are rapid sellers.

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Liquid Door Check and Spring.

PERFECTION ATTAINED AT LAST.

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It has a vertical case, with openings only at the top.

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The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material throughout.

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It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

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Sash Weights, Valve Stop Boxes, Hydrant Boxes, Meter Boxes, Washers, Special Sizes Iron and Lead Weights to Order and all Kinds of Castings.

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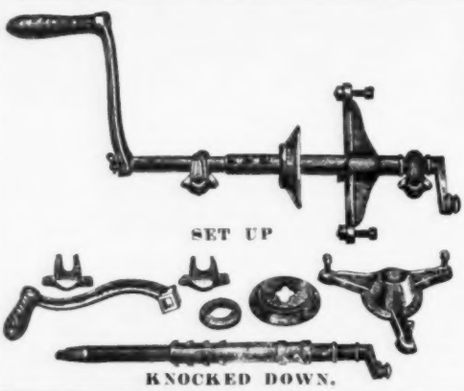
Giant Grind Stone Hanger.

ONE SIZE FOR ALL.



Stones held true and fast without wedging or cementing.

Packed One-half Dozen in a box. Weight, per dozen, 80 lbs.

Send for Price-List.

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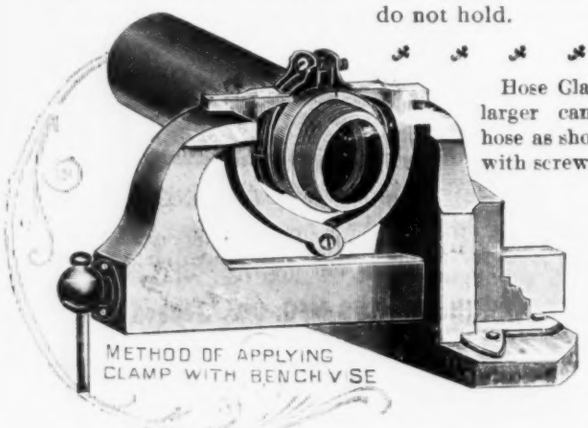
A CURE FOR LEAKY HOSE

is for the dealer to order all hose coupled with ***SHERMAN CLAMPS,*** as that will remedy many leaks that come from wire bands that stretch or cast clamps that break and do not hold.



Hose Clamps 1 in. and larger can be put on hose as shown in cut, or with screw driver alone.

Small sizes ½ and ¾ in. for lawn hose are applied to hose with screw driver alone.

SOLD BY ALL JOBBERS.

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UNITED STATES STEEL LOCK Co CLINTON, IOWA.

Sole makers of the

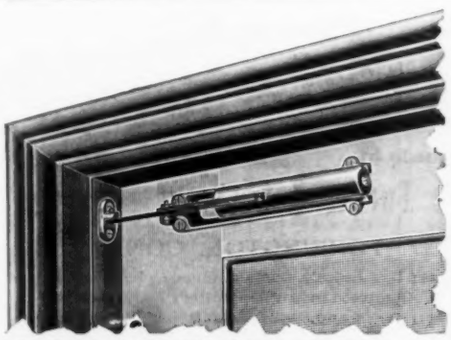
LOCKS.

Cold Rolled Steel,
Accurate in Construction,
Unsurpassed in Quality.

WARNER LOCKS

Hardware.

Artistic in Design,
Elegant in Finish,
Moderate in Price.



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An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

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RUBBER BUCKET

Will draw a continuous stream of water. Has a flat surface, the water cannot crowd back. Best material and guaranteed to give satisfaction. A perfect bucket, its construction recommends it.

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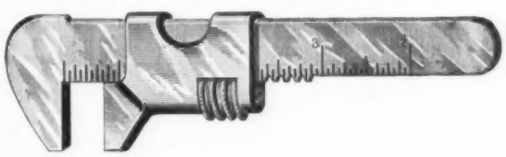
Bicycle Wrenches



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The Smith & Egge Mfg. Co.,

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Manufacturers of
Padlocks, Toe Clips,
Screwdrivers, Coasters,
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The Walda Sectional Window Weight

Square and Round weights.
Hang exactly from centre.
Only 10 inch pockets required.
Eliminates use of lead weights.

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with one-sixth the stock required in one piece weights can fill any order. Weights crated with 100 lbs. in a box, both plainly marked.

The Contractor

saves time, money and delay by balancing windows exactly at once.

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"QUAD" "QUINT"
For boring Auger Mortise for Sash Pulleys?
Send for Circular and Price.
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The Doors Never Creak

THAT ARE HUNG WITH

Stanley's Ball Bearing Steel Butts.

The butts require no oiling and swing the door easily and noiselessly. Every hardware dealer should have a copy of our artistic booklet describing these butts.

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JACK CHAINS,
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Now made by

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Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware
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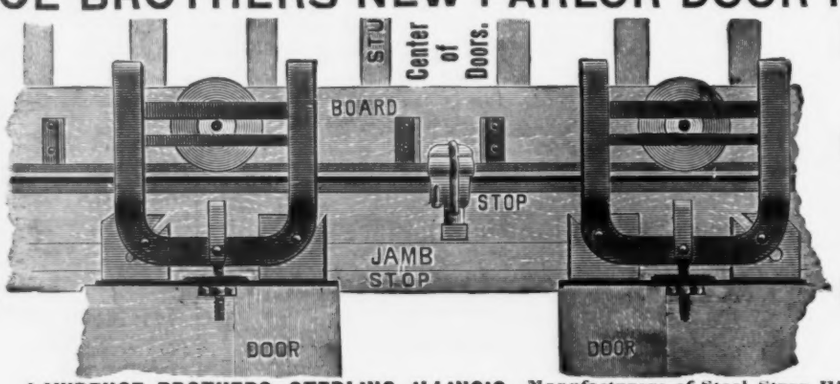
LAWRENCE BROTHERS NEW PARLOR DOOR HANGER

Steel Frame,

Vulcanized Hard Fiber Wheel,

Double Flanged Steel Rail.



Perfectly Noiseless,

Hanger Frame will work on either side of Base Plate.

No Rights or Lefts.

No Metal Flanges to Rattle.

Apply for Circulars and Prices.

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WELDLESS CHAIN SPECIALTIES. CHEAPEST—STRONGEST—BEST.

Rapidly supplanting old style German chains in foreign markets.

Manufactured only by
CARLAND CHAIN CO.,
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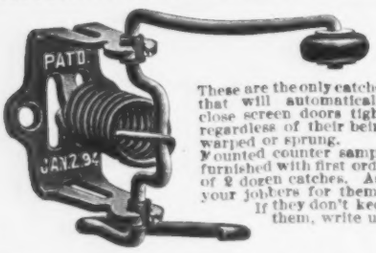
——WRITE FOR FREE SAMPLES——

Eastern Agents,
HENDRICKS & CLASS,
150 NASSAU ST., NEW YORK, U. S. A.

AUTOMATIC SCREEN DOOR CATCH.



These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. Mounted counter sample furnished with first order of 2 dozen catches. Ask your jobbers for them. If they don't keep them, write us.

THE AUTOMATIC DOOR CATCH CO.,
135-137 Lake St., Chicago, Ill.

JOBBERS TAKE NOTICE!

The **PRICES** of almost all of our steel products are

UNCHANGED AS YET.

ONEIDA COMMUNITY, (Ltd.)

KENWOOD, N. Y. NIAGARA FALLS, N. Y.

Hardware Dealers—

Have you our Catalogue?

We buy entire stocks of merchandise at sheriffs', receivers', trustees', assignees', and manufacturers' sales. See our prices on Shovels, Hatchets, Axes, Rakes, Wrenches, Locks, Butts, Vises, Nails, Wire, Iron Roofing, Tools, etc. Write at once for catalogue.

CHICAGO HOUSE WRECKING CO., West 35th and Iron Sts., CHICAGO, ILLS.

The MILBRADT ROLLING Step Ladders

that were put up 15 years ago are still working entirely satisfactorily. Since then they have been improved a great many times, and we now only repeat the language of our customers when we say: "We do not see how you can make any further improvements on the ladders, as they are perfect in every respect."

The ***Milbradt Rolling Step Ladders*** are made to order and to fit all kinds of shelving, in various styles to suit all purposes, and are especially adapted for Hardware Stores. Write for Catalogue.

MANUFACTURED BY

G. A. Milbradt & Co.,
1922 and 1924 N. Broadway, St. Louis, Mo.

.....AND.....

JOHN CALANDER, St. Paul, Minn.

Pullman Sash Balance Co.,

MAKERS OF THE

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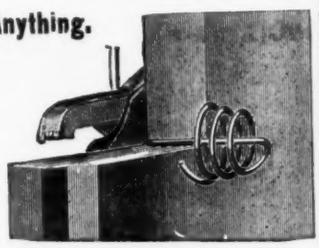
The Klondike Sample Holder

Holds Anything.

Display your goods and increase your sales.



Samples removed or replaced instantly. Hence, no tarnished articles to sell at reduced prices. Write for free samples and prices to

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THE

Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for 15 years.

Write Us for Prices.

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123 Tilden Ave., - - SAGINAW, MICH.

THE BICYCLE STEP LADDER.

Especially adapted for Hardware Stores

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**

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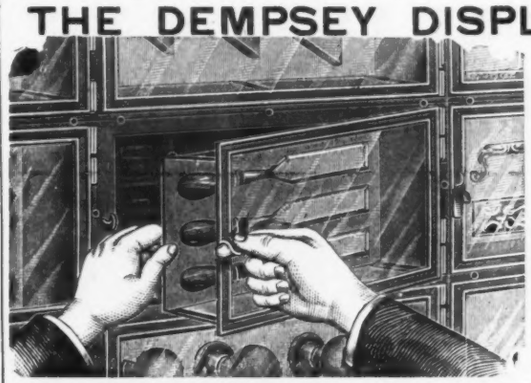
THE DEMPSEY DISPLAY DOORS.



Save stock and sample from dust, dirt and moisture.

No rust, no soiled stock.

Stock is never handled until sale is made.

Removable sample boards.

The finest fixture made and costs no more than the old style.

See full description in *The Iron Age* of September 22d.

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LOCK-CORNER SHELF BOXES.
Screw Cases, &c.
FOR THE HARDWARE TRADE
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Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request.
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PERFECT SHELF BOXES
WE MAKE
PERFECT SHELF BOXES
WRITE FOR CATALOGUE AND PRICES.
C. P. MOORE,
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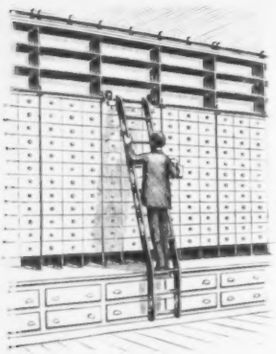

The Lane Store Ladder.

Supported by a Steel Ball Bearing Carriage having fibre tread wheels.

The Track does not obstruct shelving (is exactly in front of one of the shelves), and has movable brackets that are secured to uprights wherever they may be. No rail on counter or floor. Ladders made to order at factory, complete with fixtures attached. Customer needs only erect rail and hang ladder on it. No good store can afford to get along without a rolling ladder. **Lane's is best.** Send for catalogue.

LANE BROTHERS CO.

Prospect and River Sts., POUGHKEEPSIE, N. Y.

THE
READING STANDARD
BLOCK (Patented).

This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
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The Chicago Wire Belt Hook.
Put up 200 in a box.

These Hooks will stand more strain than any lacing; can be used on any diameter pulley; will not cut out of the belt or become loose. As good for rubber and canvas as for leather belting. Made from the very best annealed Coppered Steel Wire, so that the points will not break in clinching.

MADE BY
Wm. E. Pratt Mfg. Co.
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HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys.

MANUFACTURED BY
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IDEAL DETACHABLE
HOLD BACK
SPRING HINGE

Makes putting up and taking down Screen Doors an easy matter. The door is held as securely as by the old way and is put up or taken down in a jiffy by simply turning the button.

Ask for further particulars and free sample.

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SILVER LAKE SASH CORD
Has been the standard for thirty years.

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Every Hank Bears the Above Label.
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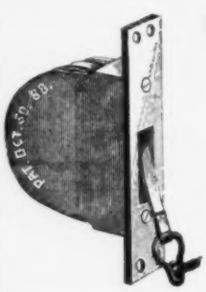

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Caldwell Sash Balance.
It stands the test of time.
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"A NOISELESS DOOR CLOSER."
The
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Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
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The uniformity obtained from our process of manufacture is especially desirable for bicycle purposes.

We invite our customers to come in on our floor and select their tube—test specimens from the general run, and to take any piece they choose to select as a sample of excellence.

NO SPECIALLY PREPARED SAMPLES.

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"Pioneers" in Correct Composition.

We should be pleased to quote you discounts on application. Send for printed matter.

STEEL FOR PRESSED, STAMPED, DRAWN AND PLATED WORK.

ESTABLISHED 1877. INCORPORATED 1884

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MANUFACTURERS & EXPORTERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER & OPEN HEARTH, HOT ROLLED, ANNEALED & PICKLED, ALSO
BRIGHT COLD ROLLED "SWEDOH" STEEL.
UNEXCELLED FOR PRESSED, STAMPED, DRAWN & PLATED WORK.

WILMOT'S PATENT
"CLINCHER" CYCLE TUBING
STRONGER THAN THE SEAMLESS.

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WILMOT'S PATENT SPRING STEEL BEDSTEAD TUBING
OF SUPERIOR FINISH, LIGHTNESS & STRENGTH.
ENGINEERS' & STEAMBOAT SETS. "COPPERIZED" ALSO NICKEL, BRASS-PLATED & JAPANNED.

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SKATE SHARPENER
15 CENTS.

SHARPENS SKATES, ALSO SALES
EASY SELLER. BIG PROFITS.
SAMPLES AND PRICES FOR THE ASKING.
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ALSO BICYCLE SPECIALTIES.

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GLIDDEN'S METALLIC REPAIR OUTFIT

The one that has the Hinged Plugs.

THIS is the smallest, neatest, most compact and practical repair outfit ever offered to the public. Complete in a tin box 1½ inches long, 1 inch wide and ¼ inch thick. It will repair a puncture at once, without the use of cement, and any woman or child can use it. The plug is made of metal with a **hinged head, which can be forced into a much smaller opening than one with a stationary head.** Two sizes of plugs are furnished with each kit, which will fit ordinary punctures; also a cutter is furnished, to be used when the puncture is too small to admit the plug.

Directions for use. Place the flat plate of the plug so it will be loose on the key. Screw the key into the plug and insert into the hole, leaving the flat plate on the outside of tire. Draw back the key so that the plug will rest flat on the inside of the tire. Screw the flat plate to plug with wrench (left hand thread), and turn key to right. Remove the key by turning to left, and you have a permanent repair which does not injure the tire or its looks.

DISCOUNT TO THE TRADE, ASK YOUR JOBBER FOR IT.

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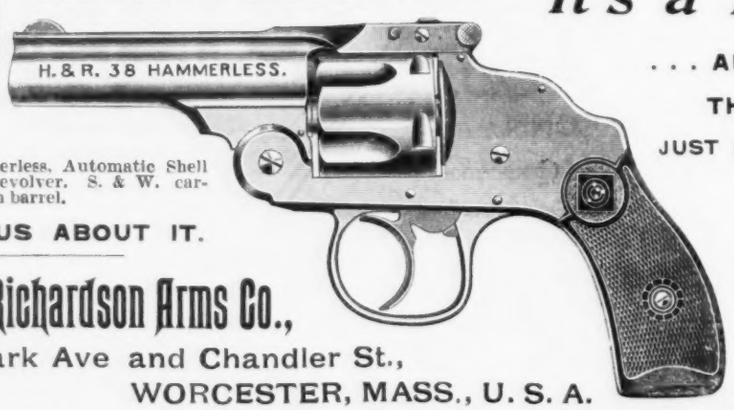
DAME, STODDARD & KENDALL, 370, 372 & 374 Washington St., Boston, Mass.

H.&R.'S

LATEST PRODUCTION. *It's a Beauty.*



New 38 Caliber Hammerless, Automatic Shell Ejecting, Central Fire Revolver. S. & W. cartridge. 3¼, 4, 5 and 6 inch barrel.

WRITE US ABOUT IT.

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THE PRICE IS JUST AS ATTRACTIVE.

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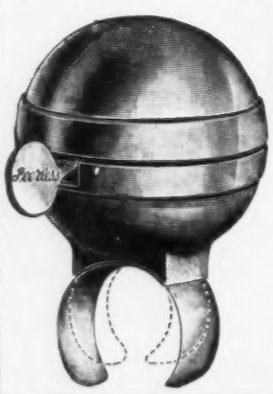
STERLING BELLS.

One best, the STERLING.

Bells of all Descriptions. Send for Catalogue.

N.N. HILL BRASS CO., East Hampton, Conn



Don't Buy Any Bells

TILL YOU HAVE SEEN OURS.

Our bells have Adjustable Levers.
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Send for our New Catalogue.

The BRISTOL BELL CO.,

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—A COMPLETE LINE OF—

BICYCLE BELLS.

Made from Pure Bell Metal.

Send for Catalogue and Price List.

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ESTABLISHED 1840.

THE HANN

Chair Hammock.

Convertible from sitting to sleeping position.

Holds its full width at all times.

The only Hammock in which you can sit up comfortably.

THE HANN MFG. CO.,

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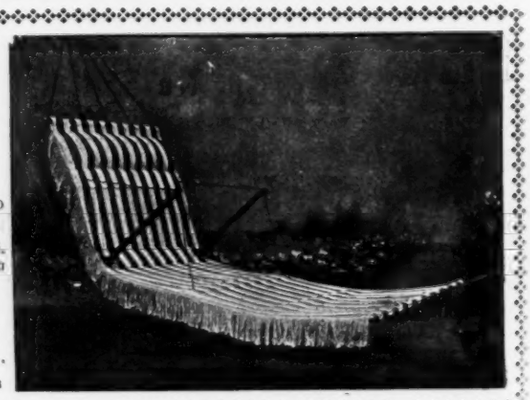
"Hann Automatic" Grass Catchers



SATISFACTION MOST COMPLETE.

ST. LOUIS, MO., December 30, 1898.

GENTLEMEN:—I have just returned from a four months' hunting trip through Montana and Idaho, during which I had occasion to use over 3000 "NEW VICTOR" shells loaded with KING'S SMOKELESS, in my 10 and 12 gauge shotguns at geese, ducks, chickens, blue grouse, sage hens and other game under many varying conditions, constituting altogether a tolerably fair test, and it is a pleasure to state that my satisfaction with this ammunition is most complete, my last experience with it confirming the opinion I formed after using a limited quantity on quail in this State. I found the Victor shells unfailingly reliable—not one miss-fire did I have—of astonishing quickness and possessing a deadly killing quality to a superlative degree, and altogether the best shotgun ammunition I have used in 30 years' experience. I take little interest in trap shooting, but the experience of some of my friends at the trap with Victor shells is in line with mine in the field.

I am, gentlemen, very truly yours,

To F. B. CHAMBERLAIN COM. CO., St. Louis, Mo. (signed) ED. WYMAN.

Thousands of sportsmen endorse

the above, and state that King's Smokeless Powder in Peters "NEW VICTOR" shells is a combination that "can't be beat."

INSIST ON HAVING THEM.

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We manufacture three types of Steel Wire Chains in various sizes which we can furnish plated, tinned, galvanized or japanned. Also made into Halter Chains, Tracer, Kennel Chains, Dog Leads, Tieouts, Cow Ties, etc., etc. Our Plumbers' and Sash Chains are First Quality.

THE BRIDGEPORT CHAIN COMPANY, Bridgeport, Connecticut, U. S. A.

BICYCLE SUNDRIES

AT LOWEST PRICES.

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B & R Acetylene Lamps.
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The cheapest and best goods in the world.
Write for Complete Catalogues.

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THE

GEM NAIL CLIPPER.

CLEANS. CUTS. FILES.

A great seller. Put up neatly and sold cheaply.

SEND FOR CIRCULAR.

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WHEELING HINGE CO.,

Headquarters For

Wrought Hinges, Carriage Bolts, Wrought Goods, Stamped Fire Shovels, Milk Jar Tops, Beer Bottle Trimmings. We solicit orders for

SPECIALTIES

Made of Steel, Zinc, Tin or Brass, Stamped or Forged.

WHEELING, W. VA.

The Federal Wire Cutter.

Cuts ¼ to 0. Send for Circular.

Chandler & Farquar, Boston, U. S. A.

THE BIGELOW... WIRE FLY KILLER.

Retails for 10 cents. J. F. BIGELOW,
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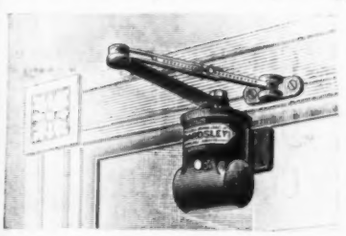
No Screws. No Nails. Economical.

A tongue on each end fastens it in the wood. Hundreds of thousands sold. Write for prices and free samples. The jobbers are selling immense quantities. Write quick.

Grand Rapids Sash Pulley Co.,
No. 1 Pearl St., - Grand Rapids, Mich.

THE "BARDSLEY"

Oil Door Check and Spring



HAS new and improved features; is free from packing friction; the checking power can be released when the door is near the closing point; more oil can be added when needed without taking it from the door and it can be readily taken apart with the aid of a screw-driver when repairs are necessary.

Size	A,	price each,	$3 50
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"	D,	" "	6 00
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JOS. BARDSLEY,
147 to 151 Baxter St., NEW YORK CITY.

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can make a greater profit on the sale of

ONE :: ::

MONARCH BICYCLE

than on a Carload of Nails.

Price and quality unapproachable.

Monarch Roadsters, = $50.00
Defiance Roadsters, = $35.00
Our King and Queen Bicycles,
The greatest pair of wheels on earth for **$25.00**
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Every model embodies 1899 features throughout.

AGENTS WANTED in every City, Town and Hamlet

"Ride a Monarch and keep in front."

MONARCH CYCLE MFG. CO.,
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Branches: NEW YORK, LONDON, HAMBURG.

CLEVELAND BICYCLES

STANDARD VALUES.

The Line that Brings Success to the Dealer and Satisfaction to the Rider.

WESTFIELD	styles 3-4 for men and women; a thoroughly well built and attractive bicycle at a low price; the lightest low-priced wheel on the market; finished in standard black and "Westfield blue," with gold stripe; detailed information on application.	
CLEVELAND	styles 61-62, for men and women; Cleveland quality throughout; Burwell dust-proof, self-oiling bearings; Burwell tires; Cleveland hardened block and pin chain—features of excellence that cannot be found with any other line. We believe this bicycle to be the best value on the market at this price.	$50 00
CLEVELAND	Chainless, styles 73-74, for men and women; Sager gears and bearings; the type of chainless on which the wonderful '98 records were made by "Major" Taylor; Burwell tires are regular equipment with these patterns.	$75 00
CLEVELAND	Roadsters, styles 66-67, for men and women; Burwell Ball and Roller Bearings dust proof and self-oiling; new hubs with "belt bearing" spokes; Burwell tires, and other distinctive features. The bicycle best adapted for all-round service.	$75 00
CLEVELAND	Special Light Roadsters, styles 64-65, for men and women; the only bicycle on the '99 market that is **entirely new**. All Cleveland features are shown in these patterns; weight 21-22 lbs., depending on equipment.	$75 00
CLEVELAND	Racer, style 68, designed especially for speed; equipped, if desired, with the new Burwell racing tires, 1⅜ inch; the best all-round tire for racing purposes that has yet been perfected; weight 19 lbs.	$75 00
CLEVELAND	style 69, 30-inch wheels, 23-25 inch frame; especially recommended for tall men; is remarkable for easy running on rough roads. All our improvements for the season of '99 are shown with this pattern.	$75 00

We invite correspondence from Bicycle Dealers seeking connection with a house whose goods are dependable and whose policy is well established.

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CLEVELAND, OHIO, U. S. A.

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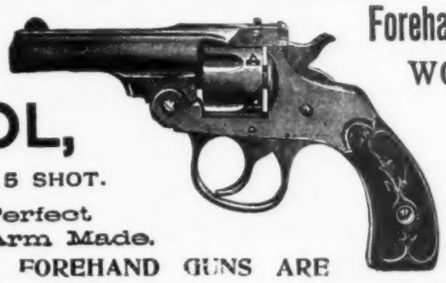
TRADE MARK.

Factory Loaded Paper Shells

Smokeless and Trap Shells,
With Nitro Powders.
Acme Shells,
With *dense* Nitro Powders.
New Club Shells,
With Black Powder.
ALL GAUGES, ANY WADDING, ANY COMBINATION OF LOADS.
SPECIAL LOADS IF DESIRED.

UNION METALLIC CARTRIDGE CO., · Bridgeport, Conn.
SEND FOR LATEST PRICE LIST.

A NEW AUTOMATIC **PISTOL,**
32 CAL. 5 SHOT.
The Most Perfect Small Arm Made.



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Forehand Arms Co.,
WORCESTER,
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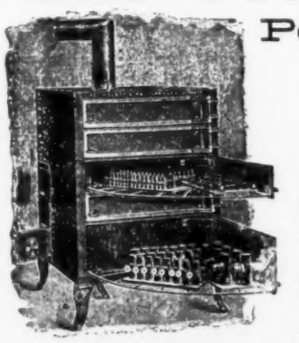
Send for Catalogue.

Millett's Patent Portable **CORE OVEN**



All complete and ready to put the fire in.
No one who makes small cores can afford to be without it. . .
DOUBLE DOORS.
One closing the oven when the other is open.
Saves Fuel, Saves Time.
Send for Circular.
MILLETT CORE OVEN CO., - Brightwood, Mass.
The ovens can be seen in the sample rooms of the S. Obermayer Co., either in Cincinnati or Chicago, and in the show rooms of J. W Paxson & Co., Philadelphia.

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STERLING
"Built like a Watch."

Chain Models, · · $50.00
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A valuable agency for 1899 for energetic dealers in hardware or kindred trades. Send for catalog and terms.

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STRIEBY & FOOTE CO.,
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Woodman's PATENT *Ticket Punches*
Send for List of 500 Dies.
R. Woodman Mfg. & Supply Co.
BOSTON, MASS., U. S. A.
ESTABLISHED 1872.

Established in 1866.
The Belden Machine Co.
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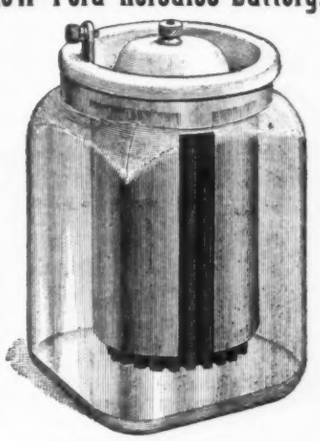
ENLARGED AND IMPROVED FACILITIES
DROP FORGINGS
IN ALL ITS BRANCHES.
Iron, Steel, Copper and Aluminum.
Specifications for estimates on your 1899 requirements solicited.
Prompt, Efficient and Satisfactory Work.

New Peru Hercules Battery.



THE VERY BEST.
The circular zinc which surrounds the carbon is attached to the top in such a manner that it cannot come in contact with the carbon, making a short circuit impossible.
The carbon is hollow and is filled with a depolarizing compound. It has a fluted outside surface and has an E. M. force of 1.47 volts.
Sold in case lots of fifty. Write for prices.
Peru Electric Mfg. Co., Peru, Indiana.

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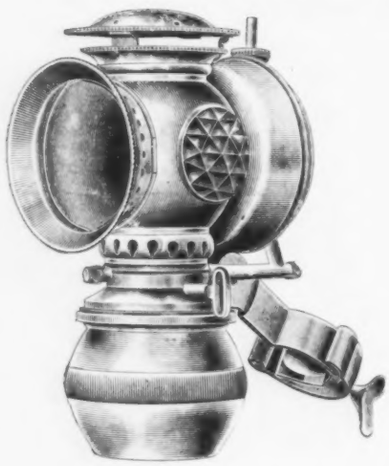

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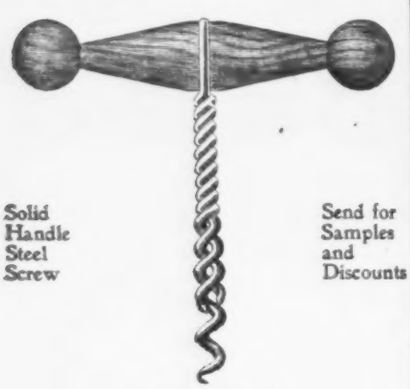

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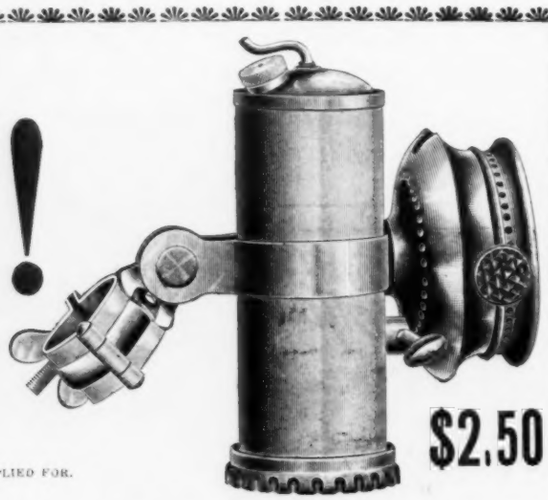

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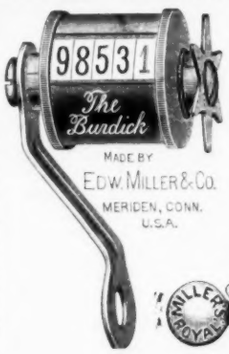

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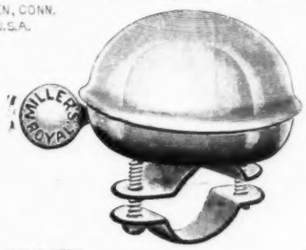

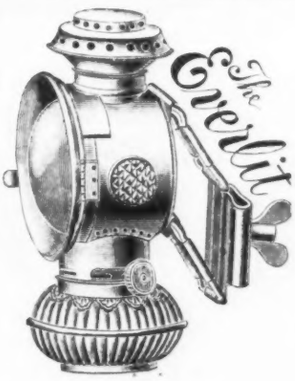

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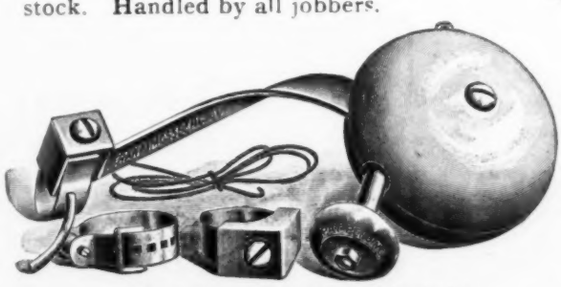

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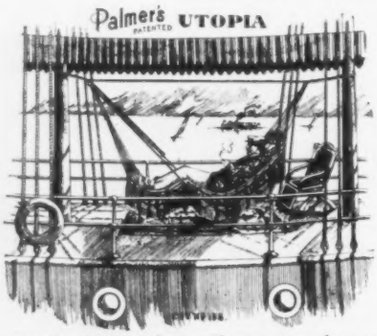

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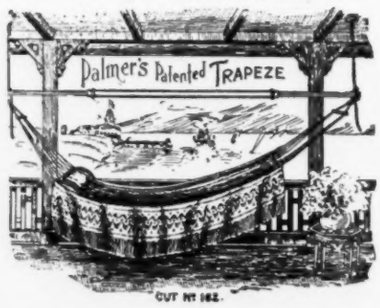

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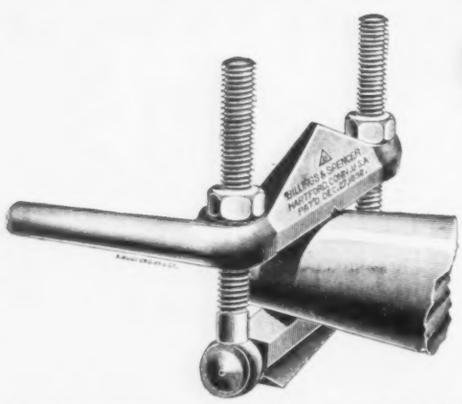

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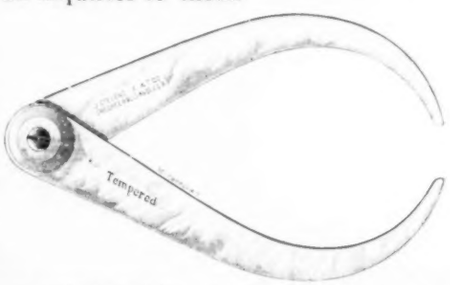

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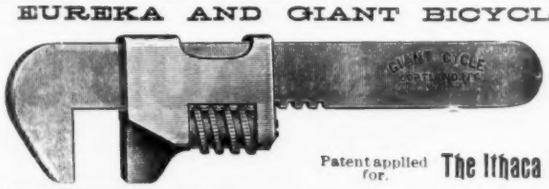

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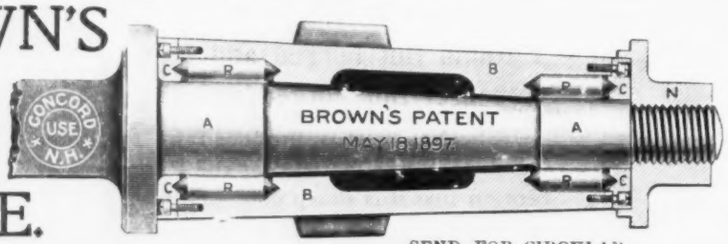

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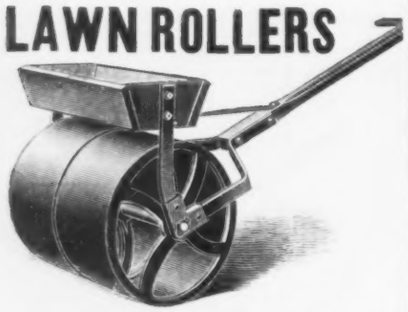

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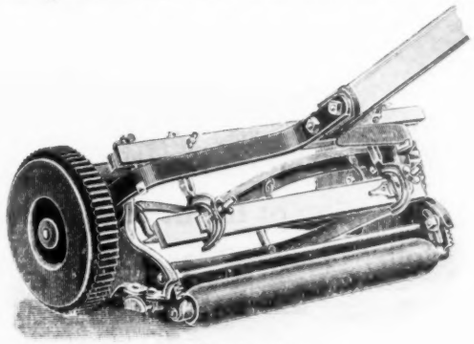

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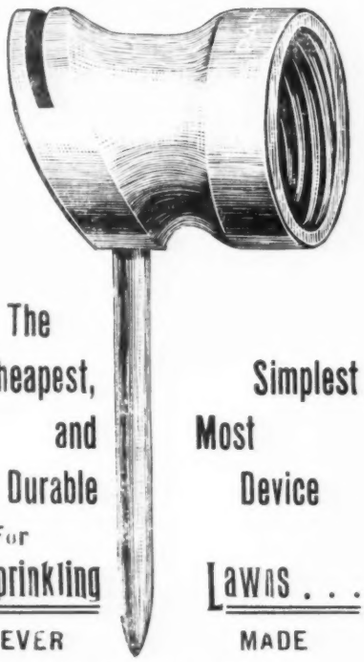

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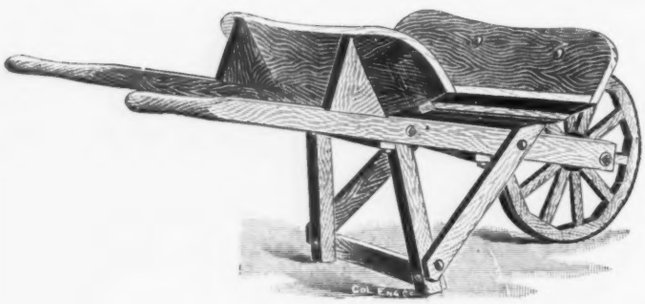

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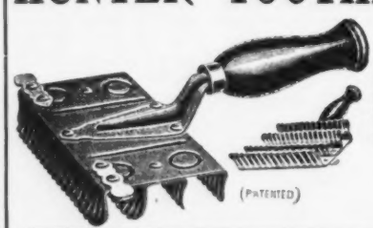

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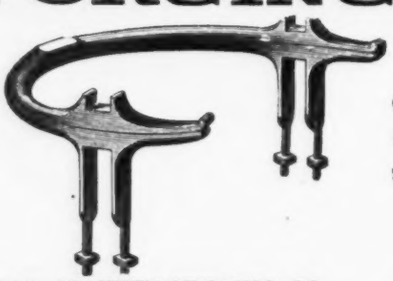

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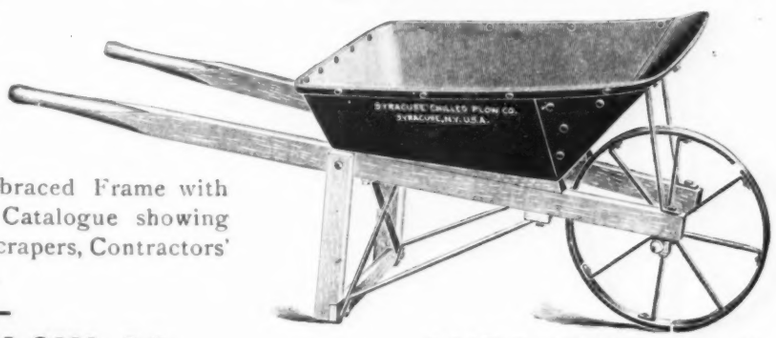

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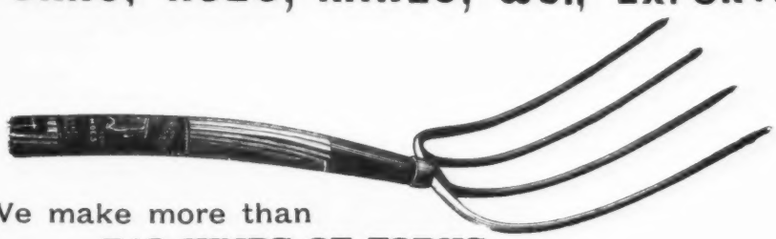

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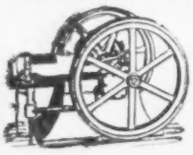

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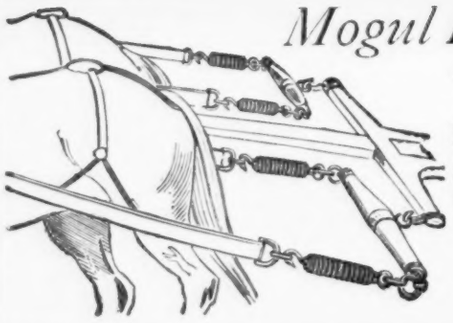

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Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Cash Recorders.
Hough Cash Recorder Co., Indian Orchard, Mass.

Casters.
Standard Caster & Wheel Co., 316-326 E. 134 St., N. Y.
Tucker & Dorsey Mfg. Co., Indianapolis.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Rowell, W. G. & Co., Bridgeport, Conn.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N.Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Bamsh & Harris Mch. Tool Co., Spring field, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Cheney, S. & Son, Manlius, N. Y.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th st. and 11th Ave., N. Y. City.
Cranes, Wm. M. Co. 1 to 31 Broadway, N.Y
Enterprise Foundry Co., Cincinnati, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McLain, J. H. Co., Canton, O.
McNeal Pipe & Foundry Co., Philadelphia, Pa
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Riverside Foundry Co., Cleveland, Ohio.
Sessions Foundry Co. Bristol, Conn.
Spencer's L. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
New Era Metal Co., Garwood, N. J.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cements
Warner, Chas. Co., Wilmington, Del.

Cement Workers Tools.
Ideal Tool Co., Indianapolis, Ind.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co. Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Schmidt, Jno. C. & Co., York, Pa.
Turner & Seymour Mfg. Co., Torrington, Conn.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y

Chucks.
Cushman Chuck Co., Hartford, Conn
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co. Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whitton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard Porter Sons Co., Nashua N.H.

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

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Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood Mass.

Cork Screws.
Clough, Rockwell, Alton N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Cornice Brakes.
Bertsch & Co., Cambridge City, Ind.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durand, W. N., Milwaukee, Wis.

Couplings, Compression.
Sonnenschein B. Co., Youngstown, O.

Covering, Pipe and Boiler.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Cover Paper.
Niagara Paper Mills, Lockport, N. Y.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas, Hot Blast.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
Baker, L. B. Mfg Co., Racine Junction, Wis.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston,
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa

Cyanide Potassium.
Talcott, Fristoe & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.
Veeder Mfg. Co., Hartford, Conn.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Hay-Budden Mfg Co., Brooklyn, N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N.Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Boards.
Dempsey Mfg Co, Cleveland, O.

Display Racks.
Hager, John N., ,t. Atkinson, Wis.

Display Racks, Poultry Netting
Burton, Matthew, Batavia, Ill.

Dog Collars.
Union Hardware Co., Torrington, Conn.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Bardsley, Jos., 147-151 Baxter St., N. Y.
Larimer Mfg. Co., Pittsburgh Pa.
Norton Door Check & Spring Co., Boston,
Pullman Sash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drill Grinders.
Eames, G. T. Co., Kalamazoo, Mich,

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale, Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Weiss Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.
York, S. M. Co., Cleveland, O.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Dripping Pans.
Fillgrove Bros. & Co., Ironton, O.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
Kilborn & Bishop Co., New Haven, Conn
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Stiles, E. S. Press Co., Watertown, N. Y.
Williams White & Co., Moline, Ill.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I
Stiles & Parker Press Co., Brooklyn, N.Y
Woolley Fdry. & Mch. Works, Anderson, Ind.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Hauson & Van Winkle Co., Newark, N. J
Mayer Maxwell M., Electric Co., 9d Ave. and 121st St., N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electrical Repairing.
Cleveland Armature Works, Cleveland, Ohio.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G. Reading Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engine and Boiler Supplies.
Sherwood Mfg. Co., Buffalo, N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass
New Castle Engineering Works, Pittsburgh, Pa.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Sague, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Mietz, Aug., 128-148 Mott St., N. Y.
New Era Iron Works, Dayton, Ohio.
Palmer, Bros. Mianus, Conn.
Thompson, J. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Lane & Godley Co., Cincinnati, O.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street N. Y.
Steward & Romaine Mfg. Co., Phila., Pa.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Farm Fencing.
Kokomo Fence Machine Co., Kokomo, Ind.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets.
Litchfield, J. M. Brooklyn, N. Y.
McKenna, A. & T., Pittsburgh, Pa.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cookers.
Electric Oil Stove Co., Homer, Mich.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Bolles, J. E. Iron & Wire Works, Detroit, Mich
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Detroit Fence Co., Detroit, Mich.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilner Wire Mfg. Co., Chicago Ill.
Kitselman Bros., Ridgeville, Ind.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Kitselman Bros., Ridgeville, Ind.
Kokomo Fence Machine Co., Kokomo, Ind.

File Cutting Machines.
Hess Machine Works, Phila., Penna.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Metzler, E. S. & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Philadelphia, Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Sherwood Mfg. Co., Buffalo, N. Y

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Fly Traps
Meyers, Fred. J. Mfg. Co., Hamilton, O.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Foot Warmers.
Chicago Foot Warmer Co., Chicago, Ill.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Ely Hoe & Fork Co., St. Johnsbury, Vt.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co. Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Rakes.
Kohler, F. E. & Co., Canton, Ohio.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Bultman, F. H. & Co., Cleveland, O.
Clough, R. M. Tolland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glass Cutting Boards.
Lufkin Rule Co., Saginaw, Mich.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Grass Hooks.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Eames, G. T., Co., Kalamazoo, Mich.
Florence Machine Co., Florence, Mass.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Grindstone Hangers.
Stowell Mfg. & Foundry Co., So. Milwaukee Wis.

Gun Implements.
Union Hardware Co., Torrington, Conn.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Halters.
Garland Chain Co., Rankin, Pa.

Hammers.
Heller & Bros., Newark, N. J.
Robertson, A. R., Boston Mass.

Hammocks.
Hann Mfg. Co., Columbus, O.
Palmer, I. E., Middletown, Conn

Hand Milling Machines.
Costlio, J. E. Machine Works, Brooklyn N. Y.

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Hangers. Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield, Iowa.
McCabe-Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers. Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.

Hangers; Storm Window and Screen.
Phœnix Mfg. Co., Milwaukee, Wis.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Cnas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Russell & Erwin Mfg. Co., New York.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Sickels & Nutting Co., 35 Barclay St., N.Y
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
Kohler, F. E. & Co., Canton, Ohio
New Britain Hdw. Mfg. Co., New Britain.
North Bros. Mfg. Co., Philadelphia, Pa.
Parks & Parks, Troy, N. Y.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Pedrick & Ayer Co., Philadelphia, Pa.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Dunn, Jas. P., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading.
Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rome Mfg. Co., Rome, N. Y.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg-Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Couplings, Air.
Pedrick & Ayer Co., Philadelphia, Pa.

Hose Menders.
Crescent Brass & Iron Co., Detroit, Mich.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Household Specialties.
Parks & Parks, Troy, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Dishes.
Clad, V. & Sons, Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Ice Picks.
Graham John H. & Co., 113 Chambers St., N. Y.
Snell Mfg. Co., Fiskdale, Mass.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.
National Injector Co., Cleveland, Ohio.
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lilienthal, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila., Pa.

Iron. *Manufacturers.*
Whitney, A. R. & Co., 29 B'way, N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Limited, McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O

Jewelry.
Myers, S. F. Co., 48-50 Maiden Lane, N. Y.

Job Lots, Hardware.
Browne & Mansfield, 245 Broadway, N. Y.
Chicago House Wrecking Co., Chicago, Ill.

Joist Hanger.
Von Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Keys, Machine.
Morton Mfg. Co., Muskegon Heights, Mich.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Gleason Tool Co., Rochester, N. Y.
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Windsor Machine Co., Windsor, Vt.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Means Conn.

Lawn Fencing, Ornamental.
Kokomo Fence Machine Co., Kokomo, Ind.
Lawson Mfg. Co., Milwaukee, Wis.

Lawn Mowers.
Ney Mfg. Co., Canton, Ohio.
Philadelphia Lawn Mower Co., Phila., Pa.
Wilcox Mfg. Co., Aurora, Ill.

Lawn Rakes.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Fan Lawn Sprinkler Co., San Francisco, Ill.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Logan & Strobridge Iron Co., New Brighton, Pa.
Tucker & Dorsey Mfg. Co., Indianapolis.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York
U. S Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co. Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Farrel Foundry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Pouliterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Rudolphi & Krummel, Chicago, Ill.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Thomas & Lowe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Hubbell, Harvey, Bridgeport, Conn.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester.

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Man Hole Forming Tools.
Haworth Mfg. Co., Liberty, Ind.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y

Metal Coating.
Steel & Iron Metal Coating Co., West. Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lowisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Machines.
Adams Co., Dubuque, Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Lucas & Gilem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mill Supplies.
Bliss, R. Mfg. Co., Pawtucket, R. I.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Ebner, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Scrapers.
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.

Molding Machines.
Pridmore, Henry E., Chicago, Ill.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Petroleum
Daimler Mfg. Co., Long Island City, N. Y.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Nail Clippers.
Cook, H. C. & Co., Ansonia, Conn.

Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Atherton, Jesse, Quarry, R. I.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Fiskdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis, Mch. Screw Co., Worcester

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. *(See Stoves, Oil, Vapor and Gasoline.)*

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Padlocks.
Russell & Erwin Mfg. Co., New York.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Johns H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, W. & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Pattern Letters.
St. Louis Electrotype Foundry, St. Louis.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Erdle & Schenck, Rochester, N. Y.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 318 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.

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Ossawan Mills Co., Norwich, Conn.

Pig Forceps.

Reliners, J. S. & Co., Davenport, Iowa.

Pig Iron.

Hickman, Williams & Co., Chicago, Ill.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Sayler, W. P. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.

Pig Iron Storage.

Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.

Vulcan Iron Works, Chicago, Ill.

Pincers.

Washington Tool Co., Owatonna, Minn

Pipe, Bent.

Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.

Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Morrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.

Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.

Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.

Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.

Dart, E. M. Mfg. Co. Providence, R. I.

Pipe, Water and Gas.

McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.

Stanley Rule & Level Co., N.Y.

Planers.

Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore,
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Illes Tool Works, Hamilton, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.

Myers, S. F. Co., 48-50 Maiden Lane, N. Y.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.

Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.

Cutter, Wood & Stevens, Boston, Mass.

Pliers.

Bridgeport Mfg. Co, Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Pop Guns.

Markham Air Rifle Co., Plymouth, Mich.

Poultry Fencing.

De Kalb Fence Co., De Kalb, Ill.

Poultry Nettings.

American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Iron City Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland,
Wright & Colton Wire Cloth Co., Worcester, Mass.

Poultry Netting Display Rack.

Burton, Matthew, Batavia, Ill.

Power Hammers.

Beaudry & Co. Boston Mass.
Bradley Co., Syracuse, N. Y.
Dieneit & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. S., Worcester, Mass.
Lonz & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati O.

Power Transmitting Mach'nry.

Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co. So. Norwalk, Ct.

Presses, Power.

Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg Co., Providence, R. I.
Niagara Machine & Tool Works, Buffalo,
Phila. Mch. Tool Co., Philadelphia, Pa.
Rudolphi & Krummel, Chicago, Ill.
Stiles, E. S. Press Co., Watertown, N. Y.
Wooster Fdry & Mch. Wks., Anderson, Ind.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.

Henry, John T. Mfg. Co., Hamden, Conn

Pulleys.

Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.

Pulley Lathes.

Woods, T. B. Sons, Chambersburg, Pa.

Pump Buckets.

Frese & Bro., H. C., Chicago, Ill.

Pump Chains.

Cleveland Galvanizing Wks., Cleveland.

Pumping Machinery.

Cook A. B., Lawrenceburg, Ind.
Pfeiffer & Brownell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.

Barnes Mfg. Co. Mansfield, Ohio.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.

Punches, Conductors.

Meyers, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.

Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Mersick, C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles, E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.

Harrington & King Perforating Co., Chicago, Ill.

Push Carts.

Syracuse Chilled Plow Co., Syracuse.

Pyrometers.

Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.

Green Ridge Iron Works, Scranton, Pa.

Railways, Industrial.

Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.

Burditt & Williams, Boston, Mass.

Razors.

Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.

Pike Mfg. Co., Pike Station, N. H.

Razor Strops.

Razorine Mfg Co., 134 Pearl St., N. Y.

Reamers.

Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.

Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reels.

Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.

Bowen Mfg Co., Fond du Lac, Wis
Grand Rapids Refrigerator Co., Grand Rapids, Mich,
Gurney Refrigerator Co., Fond du Lac, Wis.
Mackinaw Refrigerator Co., 106 Chambers St., N. Y.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.

Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.

Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.

Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn

Repairing Sets, Family.

Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.

Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.

Forehand Arms Co., Worcester, Mass.,
Harrington & Richardson Arms Co., Worcester, Mass.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.

Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.

Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jones & Laughlins, Ltd, Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. P. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.

Shuster, F. B. Co., New Haven, Conn.

Roasters and Bakers.

Shepard, Sidney & Co., Buffalo, N. Y.

Rod Mill Machinery.

Morgan Construction Co., Worcester, Mass.

Roller Bearings.

Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.

Whitehurst, R. W. & Co., Norfolk, Va.
Wilder, J. K. & Sons, Monroe, Mich.

Rolling Mill Machinery.

Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper

Thompson, Hugh L., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.

Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Riverside Foundry Co., Cleveland, Ohio.
Seaman, Sheeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.

Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.

Covert Mfg. Co., West Troy, N. Y.

Rope Shield.

Ironsides Co., Columbus, Ohio.

Rope Transmission and Hoisting.

Hunt, C. W. Co., West New Brighton, N. Y.
Woods, T. B. Sons, Chambersburg, Pa.

Rubber Goods

Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bampers.

Canfield, H. O., Bridgeport, Conn.

Rules.

Lufkin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.

Williams, A. C., Ravenna, O.

Sad Iron Handles.

Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.

Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.

Ward, Edgar T. & Sons, Boston, Mass.

Sand Mixer.

Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.

Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.

Millar, C. & Son, Utica, N. Y.

Sash Balances.

Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.

Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.

Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.

Empire Forge Co., Lansingburgh, N. Y.
Grand Rapids Sash Pulley Co., Grand Rapids, Mich.
Logan & Stroebridge Iron Co., New Brighton, Pa.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.

Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.

National Specialty Mfg. Co., Phila., Pa.

Saws.

Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.

Ladd, W. C., Bristol, Conn.

Saw Sets.

Disston, Henry & Sons, Phila., Pa.
Kohler, F. E. & Co., Canton, O.
Morrill, Chas., 35 Warren St., N. Y.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.

Atkins, E. C. & Co., Indianapolis, Ind.

Scales.

Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.

Michigan College of Mines, Houghton, Mich.

Scrap Metals.

Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton R., New York.

Scrapers, Road.

American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.

Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.

Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.

Darby, Edw. & Sons, Philadelphia, Pa.
Phillips, A. J. Co., Fenton, Mich.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.

Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.

Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Gay & Parsons, Augusta, Me.
Goodell Bros. Co., Greenfield, Mass.
New England Specialty Co., No Easton, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.
Sawyer Tool Co., Fitchburg, Mass.

Screw Machinery.

Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*

Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.

Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.

Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co. Pike Station, N. H.

Seed Sowers.

Goodell Co., Antrim, N. H.

Shade Roller Fixtures.

Standard Stamping & Die Co., Brooklyn N. Y.

Shafting.

Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.

Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phoenix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.

Cincinnati Planer Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co. Pawtucket, R. I.

Shears and Scissors.

Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.

Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.

Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.

Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.

Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.

Bicycle Step Ladder Co., Chicago, Ill
Coburn Trolley Track Mfg. Co., Holyoke
Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shelving.

Warren, J. D. Mfg. Co., Chicago, Ill.

Ship Chandlery.

Wilcox, Crittenden & Co., Middletown, Conn.

Shovels, Spades and Scoops.

Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.
Terre Haute Shovel & Tool Co., Terre Haute, Ind.

Sieves.

Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.

Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.

Dame, Stoddard & Kendall, Boston, Mass.
Union Hardware Co., Torrington, Conn.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners.

Union Hardware Co., Torrington, Conn.

Slaw Cutters.

Disston, Henry & Sons, Philadelphia, Pa.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Smelting Works.

Reeves, Paul S., 760 S. Broad, Phila.

Snow Shovels.

Phillips, A. J. Co., Fenton, Mich.

Soapstone Goods.

Pike Mfg. Co., Pike Station, N. H.

Soldering Copper Handles.

Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soles.

Baxter, Schenkelberger & Co., Boston, Mass.

Spark Coils.

Varley Duplex Magnet Co., Jersey City N. J.

Spark Guards.

Estey Wire Works Co., 65 Fulton, N. Y.

Speaking Tubes.

Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialty Manufacturers.

American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.

Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.

Hungerford, U. T., Brass & Copper Co 121 Worth St., N. Y.

Spoons and Forks.

Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.

Dame, Stoddard & Kendall, Boston, Mass
Hartley & Graham, 313-315 B'way, N. Y.

Sprayers.

Eureka Co., Rock Falls, Ill.

Spray Pumps.—*See Pumps.*

Springs.

Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O.
Dunbar Bros., Bristol, Conn.
Lord Bros. Mfg. Co., Tilton, N. H.

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Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Smith Machine Co., Montpelier, Vt.
Snell, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Weich, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Hommer Bros., Brooklyn, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland, O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hathaway Mfg. Co., Bridgeport, Conn.
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.

Steam Traps.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport,
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Flanges, Weldless.
Latrobe steel Co., Philadelphia, Pa.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Musket's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Manufacturers' Agents.
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Stee Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St. N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Hilbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Acme S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Jones & Lamson Mch. Co., Springfield, Vt.
Pratt & Whitney Co., Hartford, Conn.
Sarecki Mfg. Co., Erie, Pa.
Foster Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Stokers.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Cleveland, O.
Warren, J. D. Mfg Co., Chicago, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stove Trucks.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Stoves, Oil, Vapor & Gasoline.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills.

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tack Claws.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Ripley & Bartlett, Plymouth, Mass.
Shelton Co., Birmingham, Conn.
Stanley G. W. Co., 6 Ieville, Ill.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

Tap Holder.
Ideal Machine Works, Hartford, Conn.

Tapes.
Lufkin Rule Co., Saginaw, Mich.

Taps and Dies.
Besly, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Proudman Bros., Meriden, Conn.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield,

Tea and Coffee Pots.
Rome Mfg. Co., Rome, N. Y.

Tea Kettles.
Rome Mfg. Co., Rome, N. Y.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Terne Plate.
American Tin Plate Co., Chicago, Ill.

Thuroscopes.
Bayer & Co., Palla, Pa.

Time Recorders.
Heywood Bros. & Wakefield, Gardner, Mass.

Tin Mills.
Phillips, F. R. Sons, Phila., Pa.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo.

Tin Plate.
American Tin Plate Co., Chicago, Ill.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore

Tire Repair Outfits.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.,
Ellis, R. Mfg. Co., Pawtucket, R. I.

Tool Racks.
Hager, John N., Ft. Atkinson, Wis.

Tools.
Athol Machine Co., Athol, Mass.
Besly, C. H. & Co., Chicago, Ill.
Brown, R. H. & Co., New Haven, Conn.
Fray, Jno. S. & Co., Bridgeport, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls,
Millers Falls Co., 93 Reade, N. Y.
Myers, S. F. Co., 48-50 Malden Lane, N. Y.
Schollhorn, Wm. Co., New Haven, Conn
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
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Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
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Mossberg & Granville Mfg. Co., Providence, R. I.

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Washburn & Moen Mfg. Co., Worcester

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Cincinnati Railway Supply Co., Cincinnati, O.

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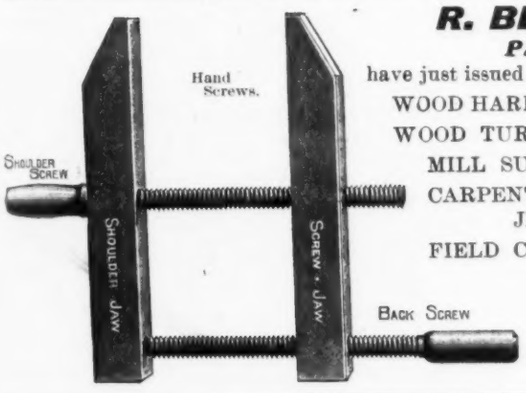

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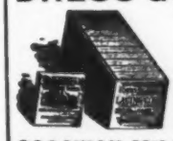

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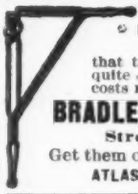

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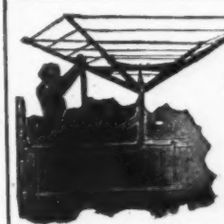

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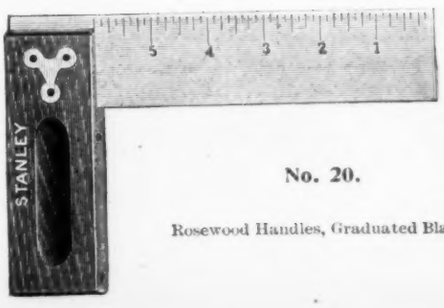

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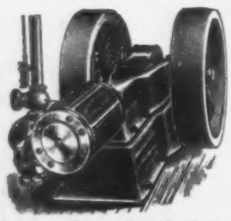
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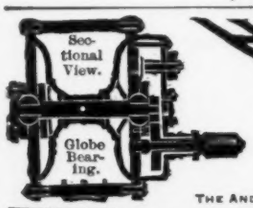

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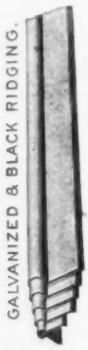

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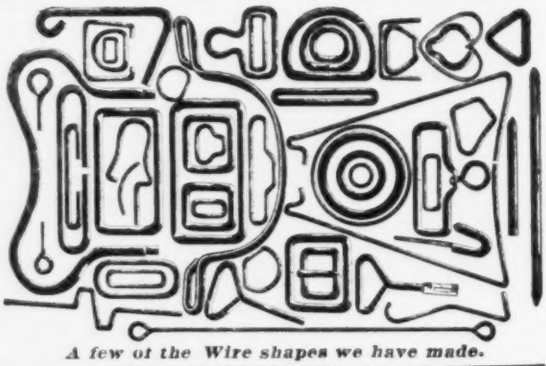

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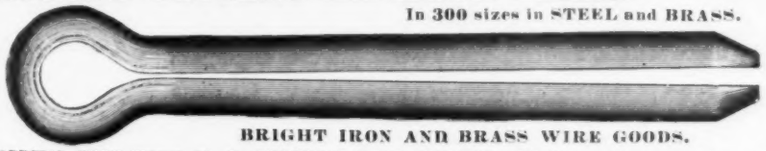

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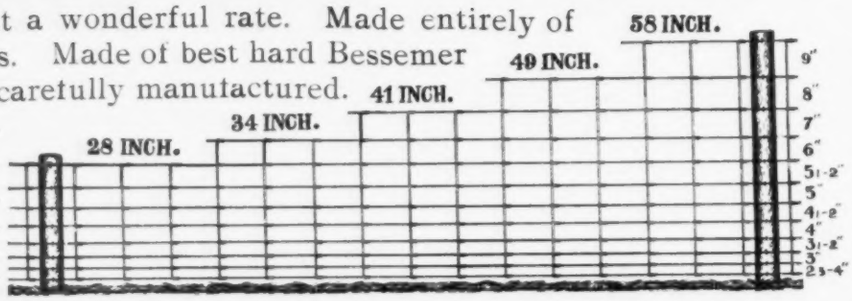

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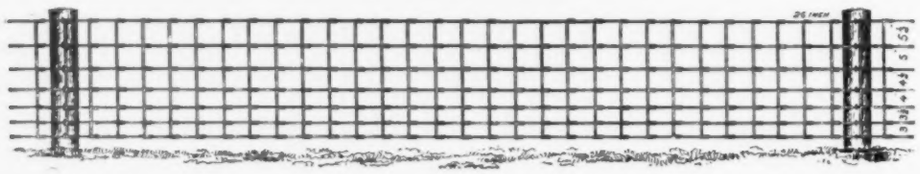

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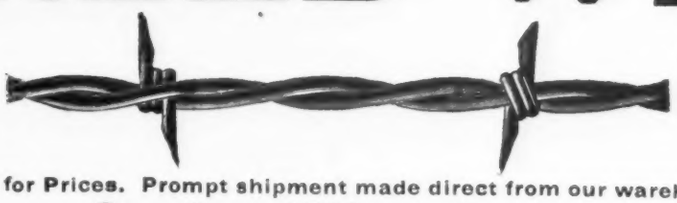

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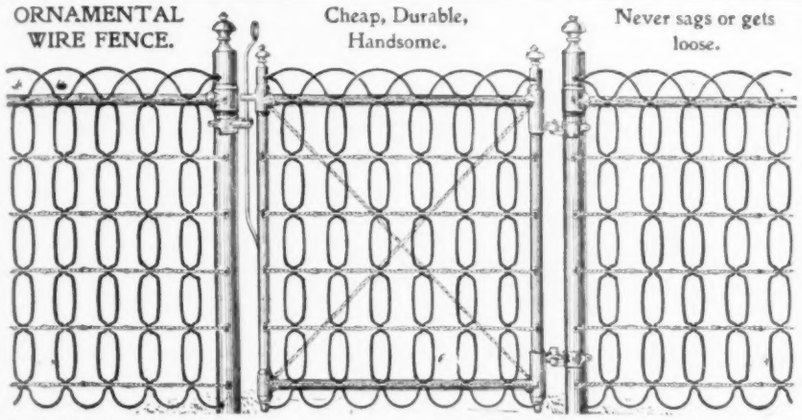

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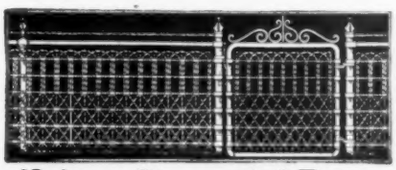

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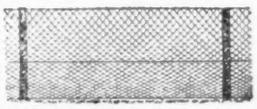

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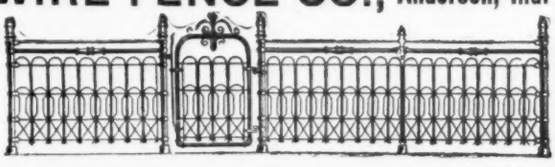

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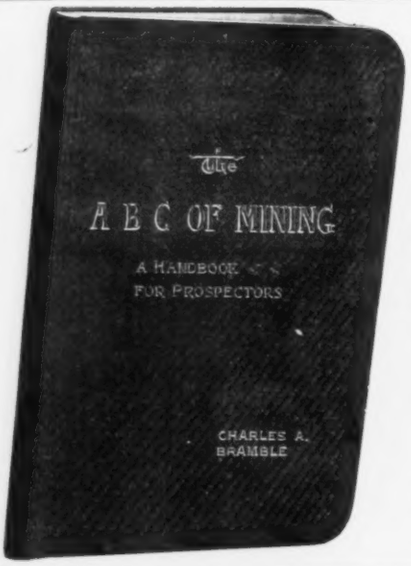

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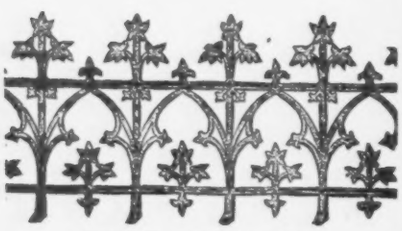

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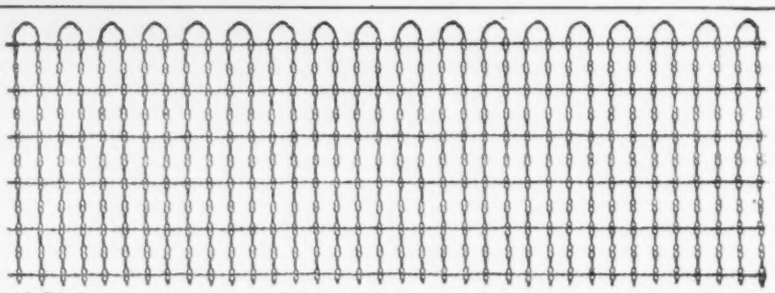

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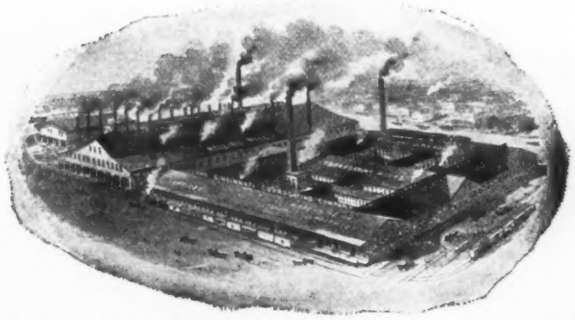

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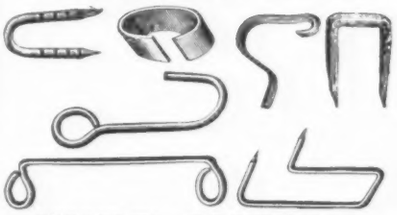

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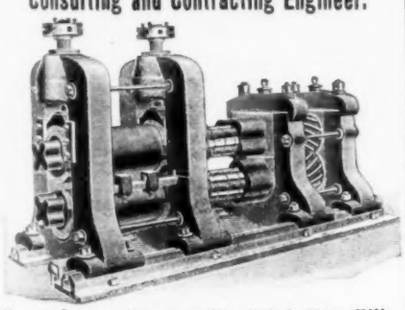

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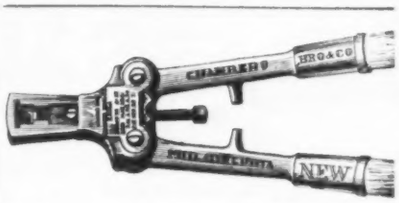

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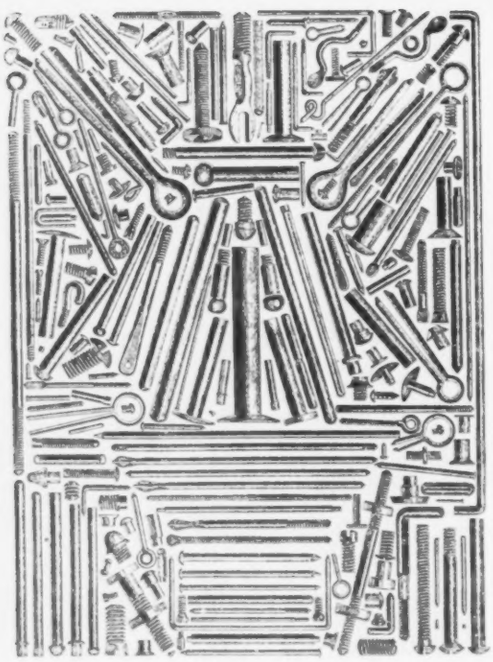

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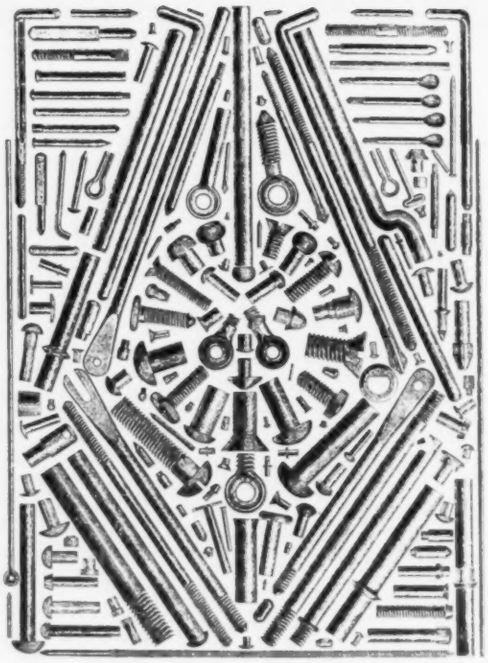

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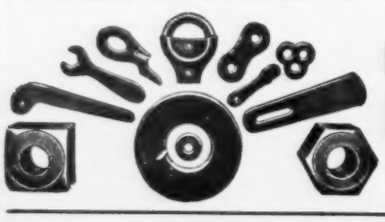

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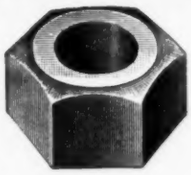

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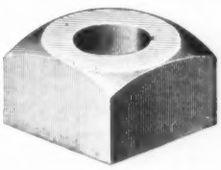

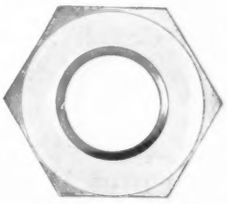

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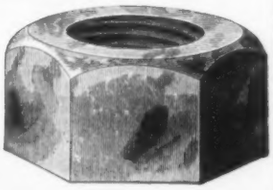

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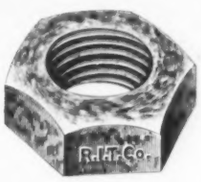

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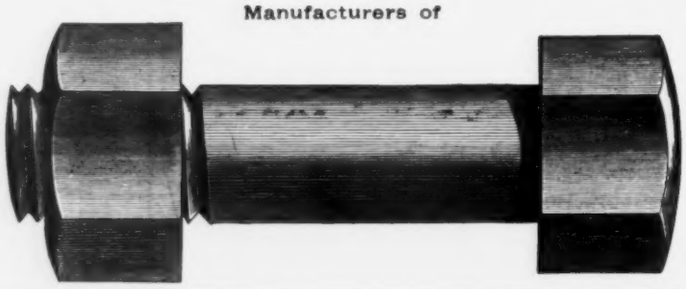

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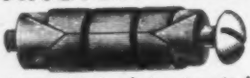

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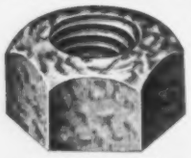

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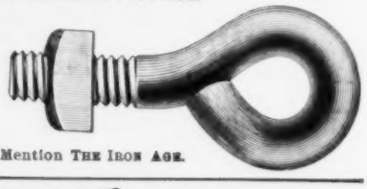

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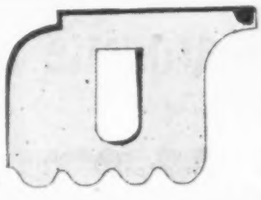

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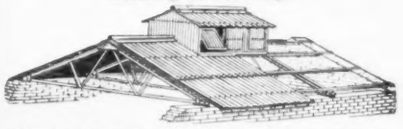
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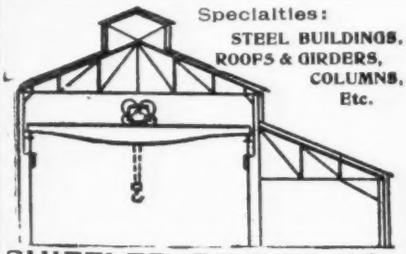
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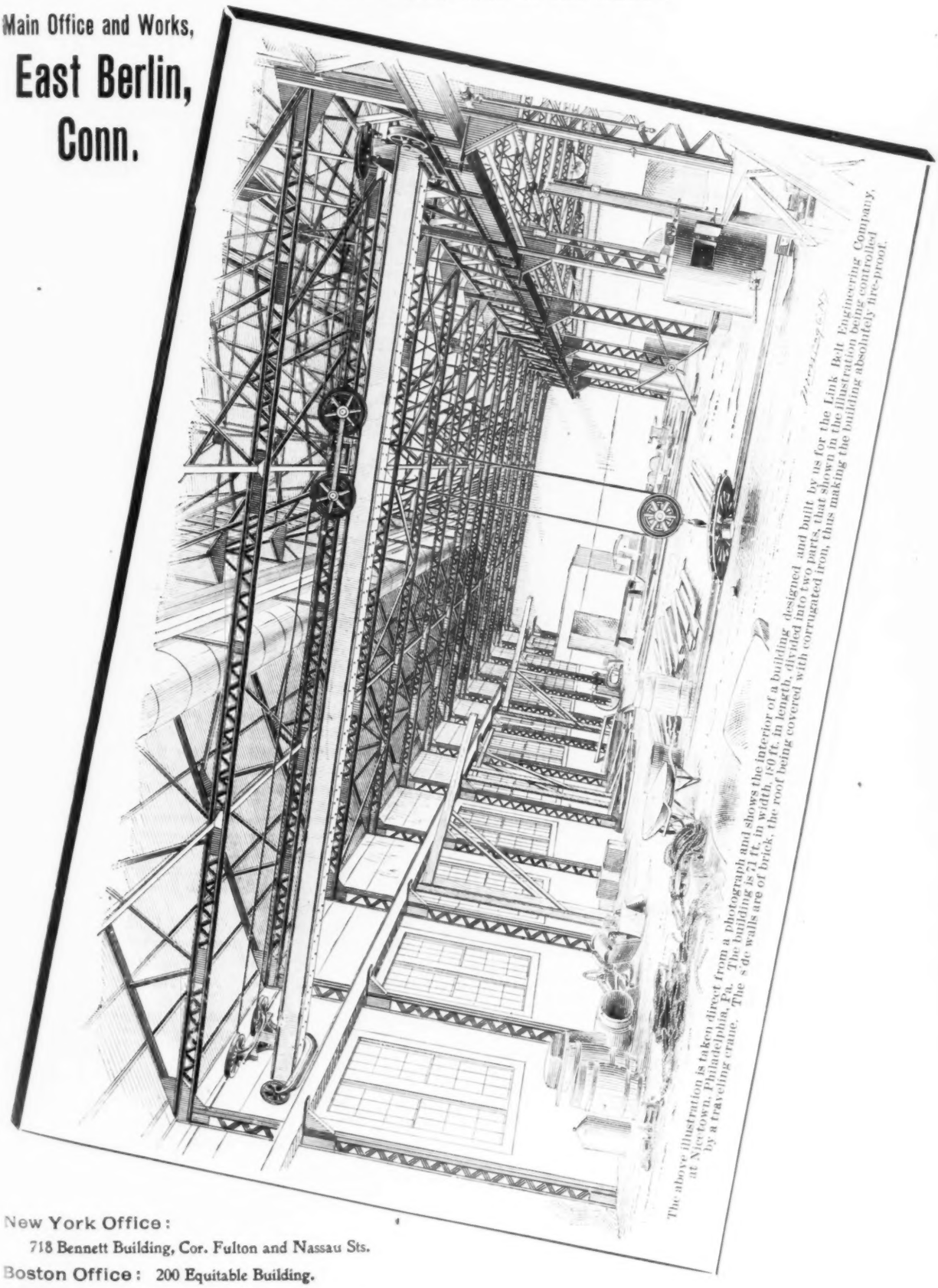

The above illustration is taken direct from a photograph and shows the interior of a building designed and built by us for the Link Belt Engineering Company, at Nicetown, Philadelphia, Pa. The building is 71 ft. in width, 180 ft. in length, divided into two parts, that shown in the illustration being controlled by a traveling crane. The walls are of brick, the roof being covered with corrugated iron, thus making the building absolutely fire-proof.

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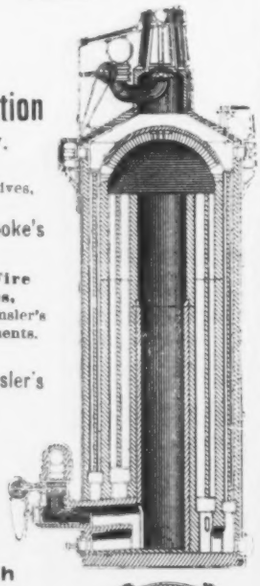

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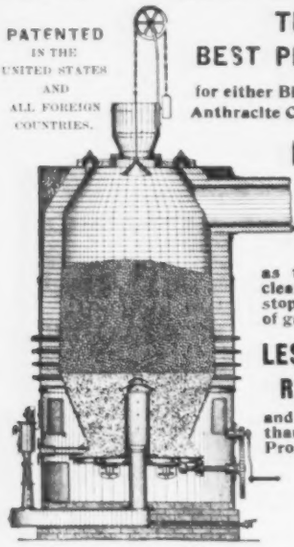

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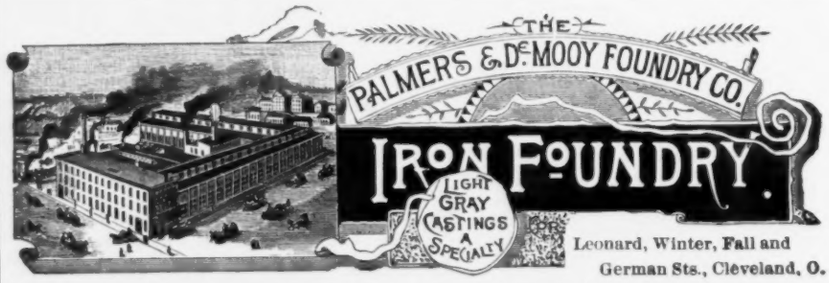

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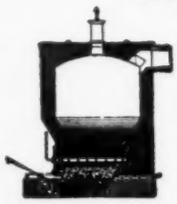

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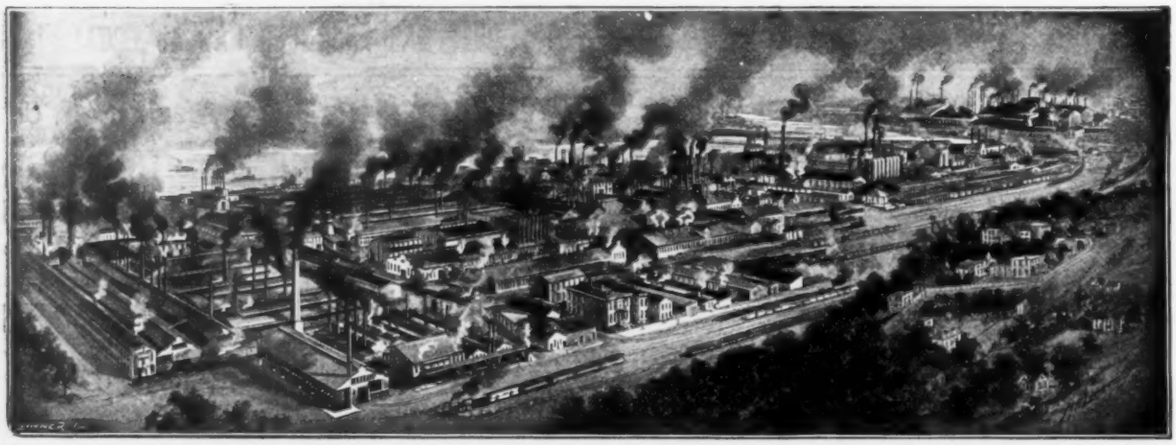

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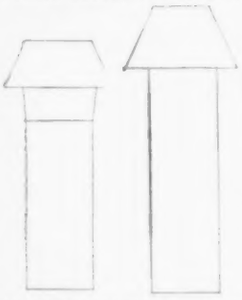

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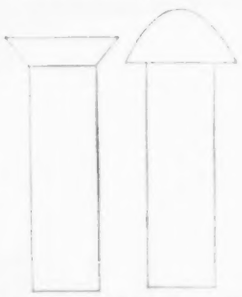

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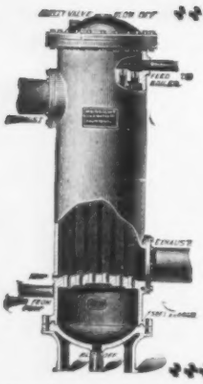

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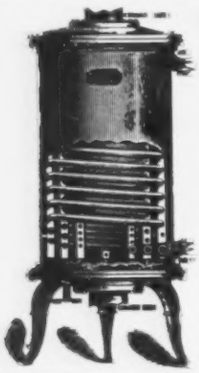

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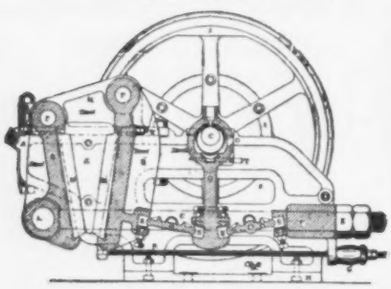

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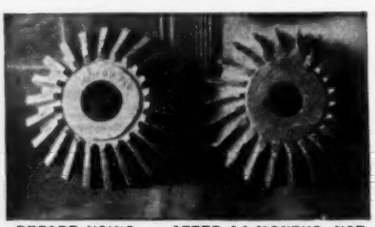

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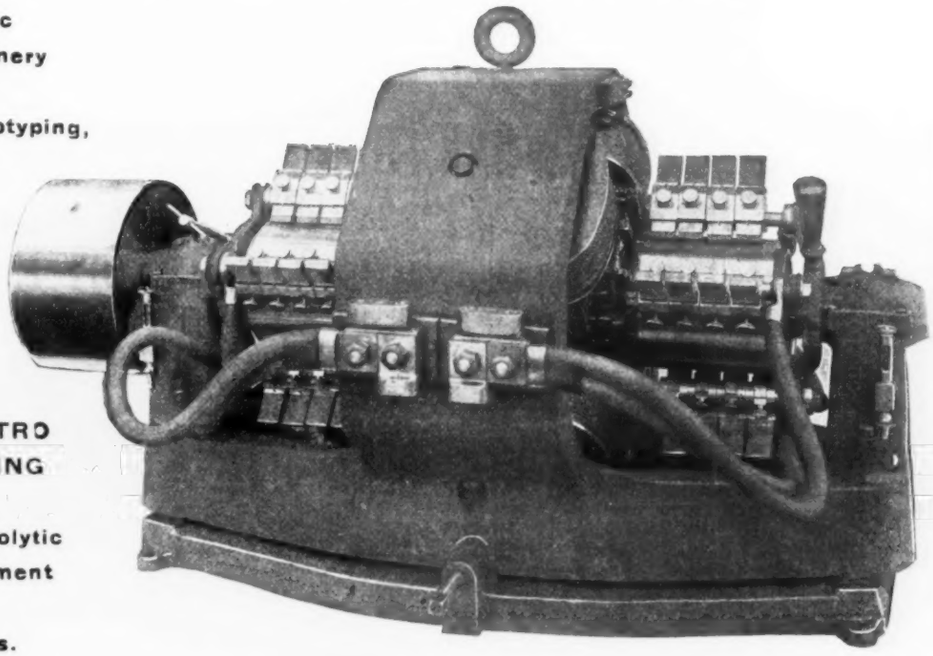

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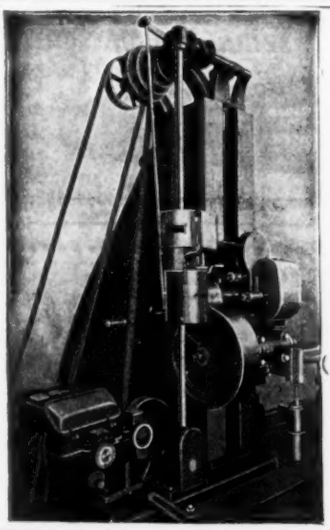

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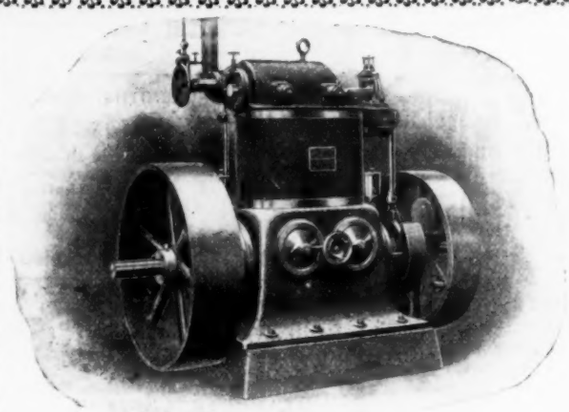

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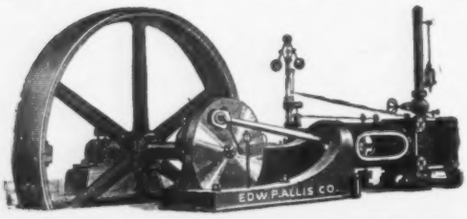

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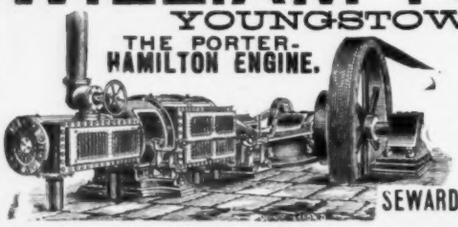

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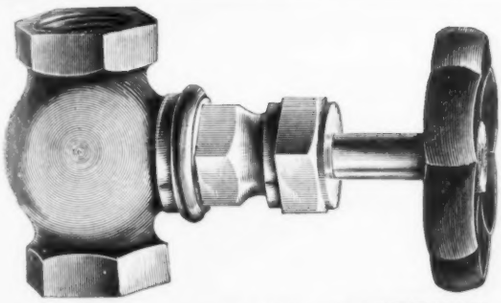

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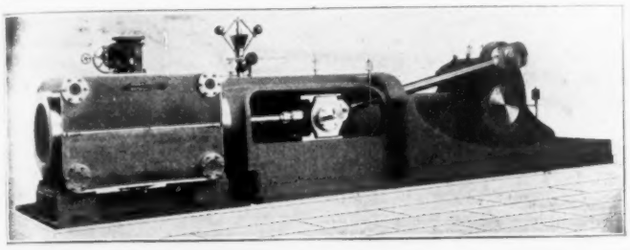

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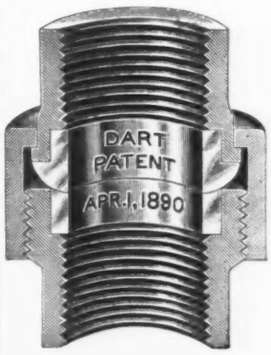

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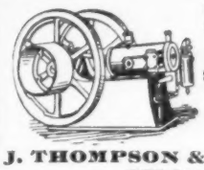

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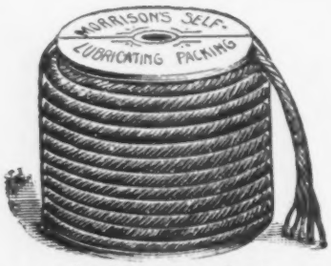

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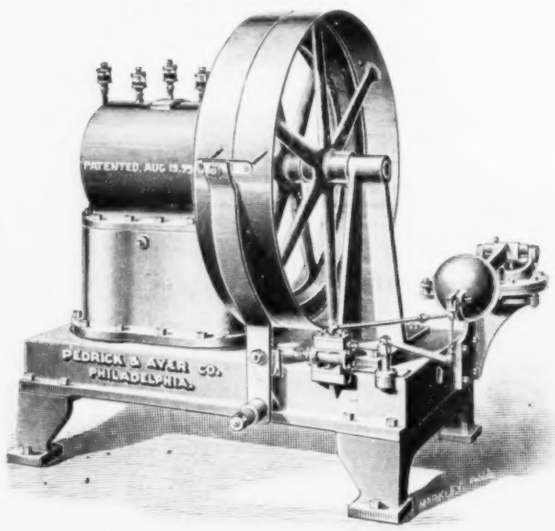

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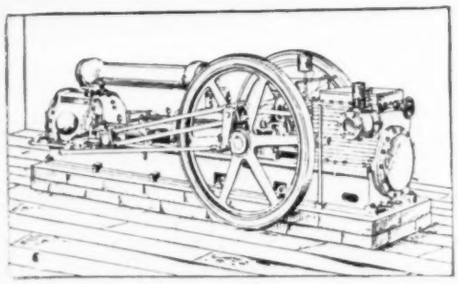

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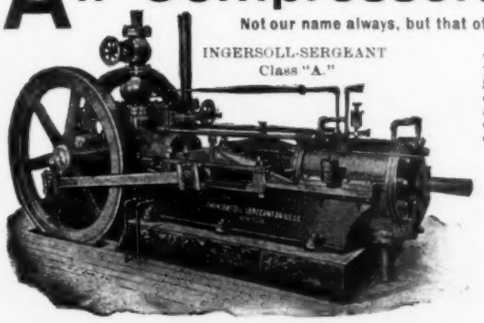

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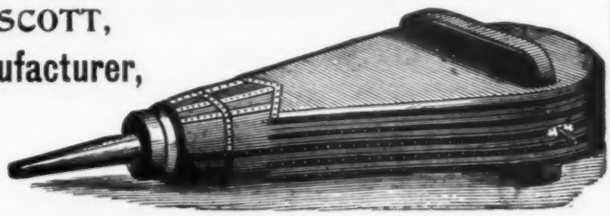

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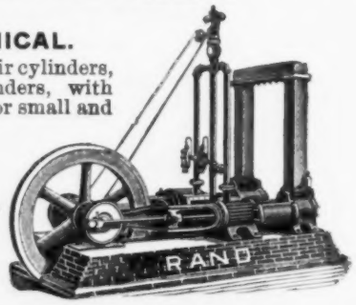

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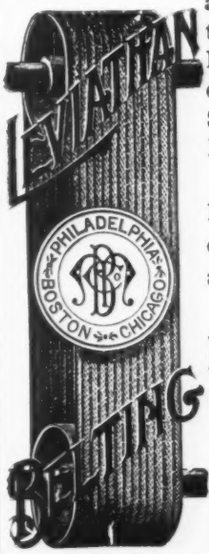

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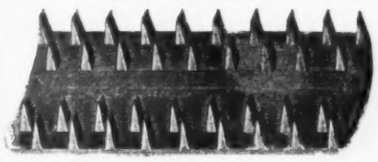

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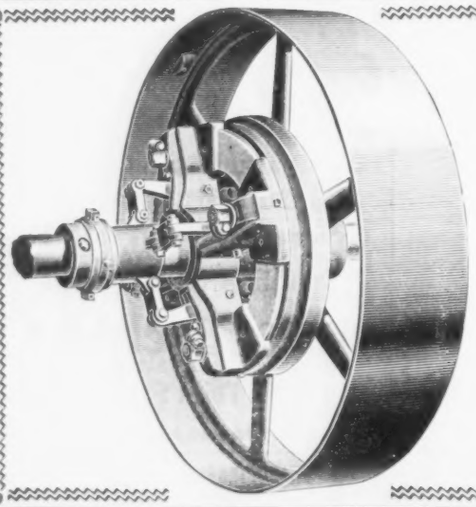

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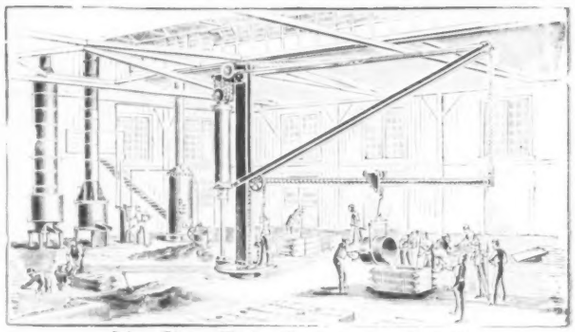

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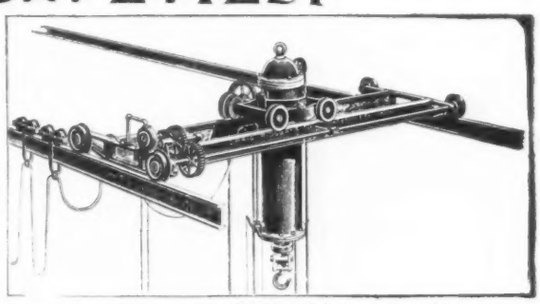

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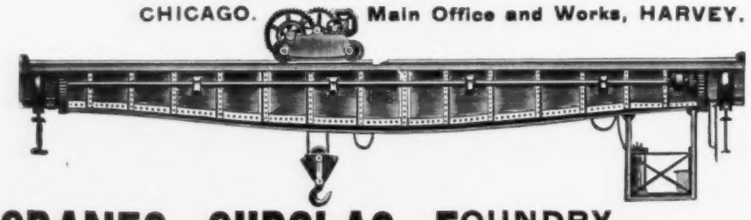

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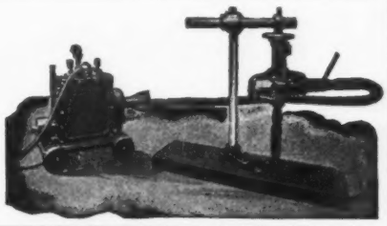

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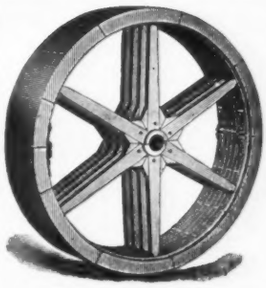

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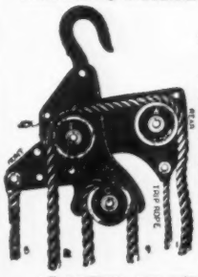

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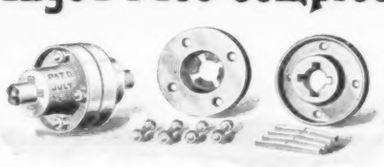

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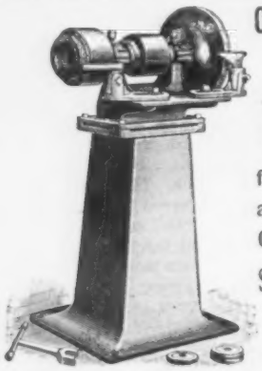

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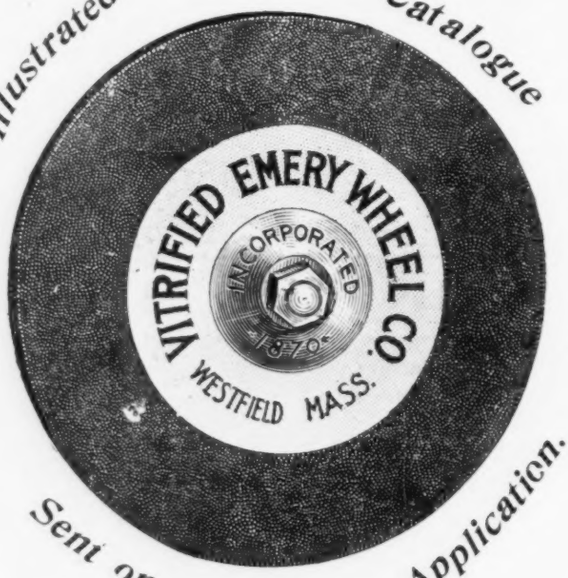

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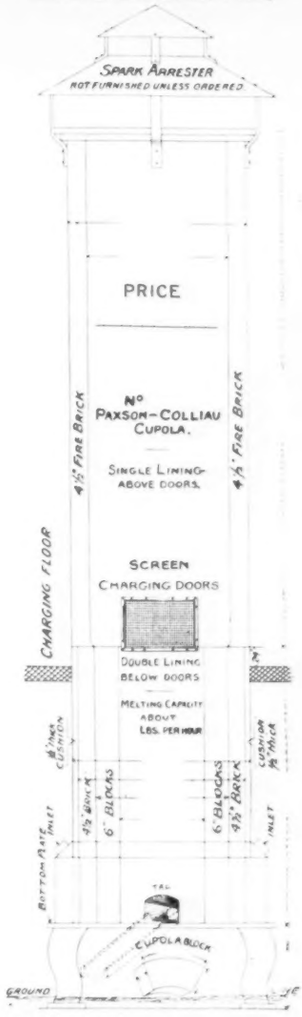

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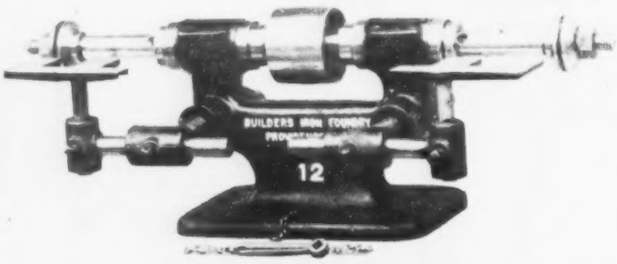

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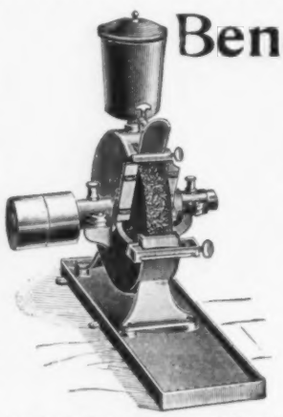

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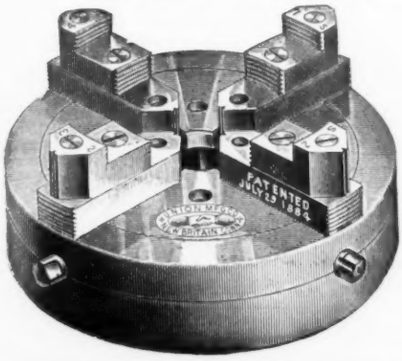

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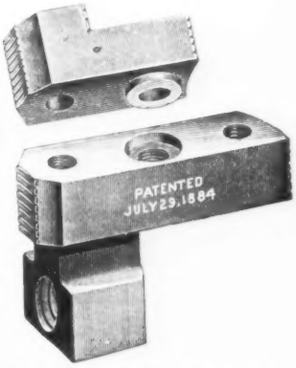

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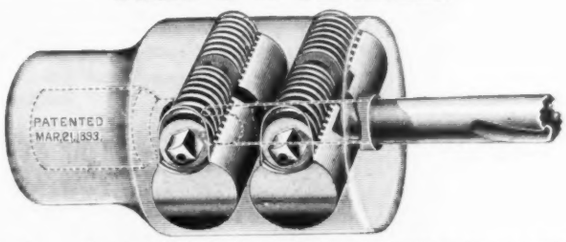

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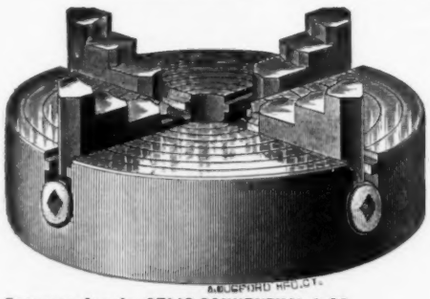

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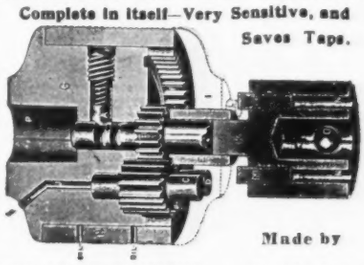

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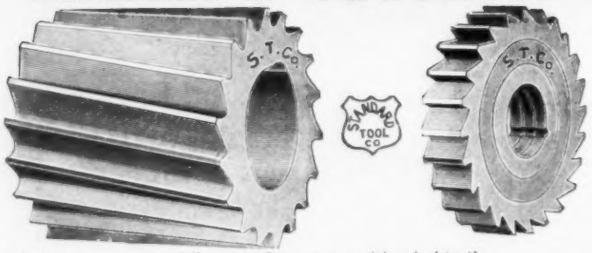

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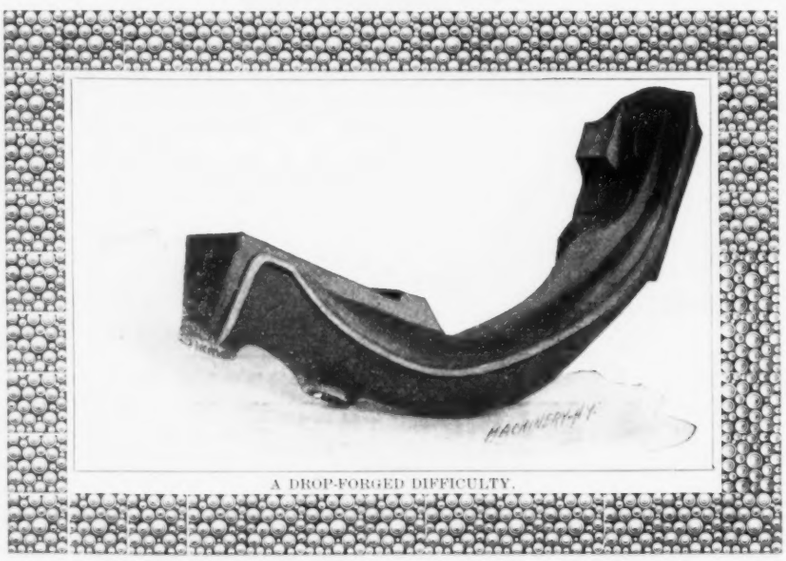

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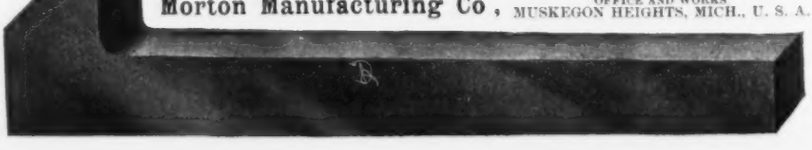

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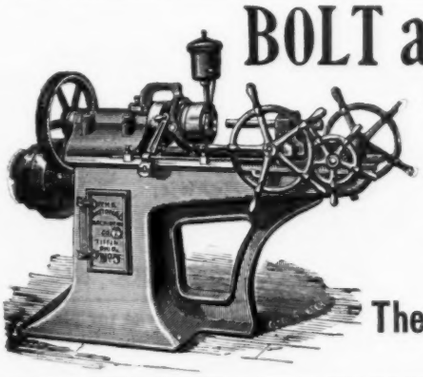

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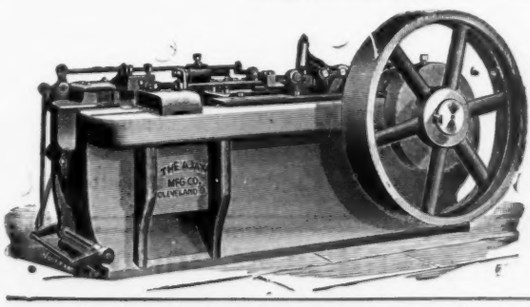

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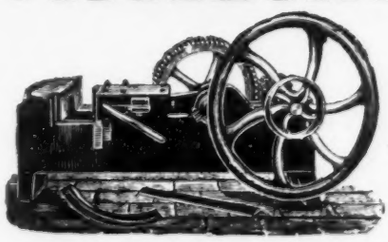

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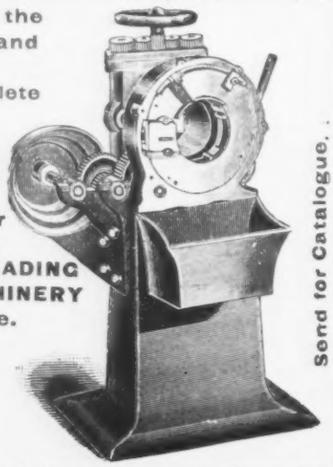

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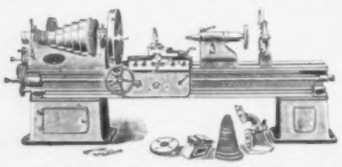

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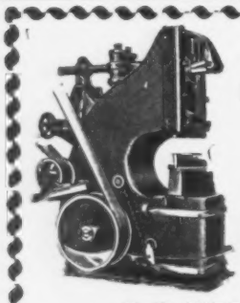

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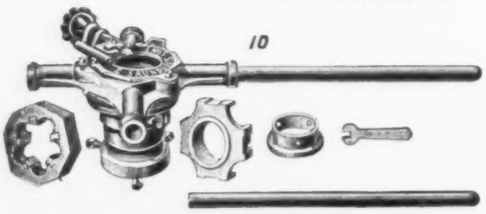

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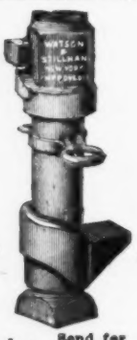

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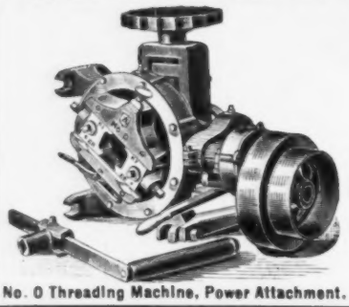

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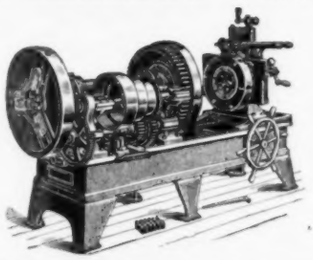

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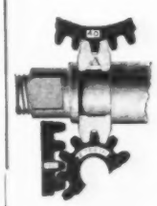

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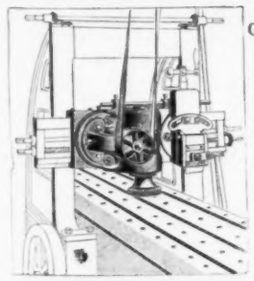

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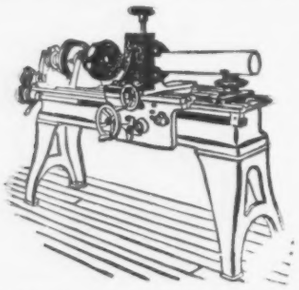

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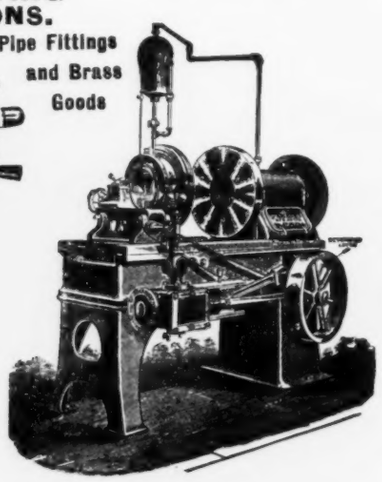

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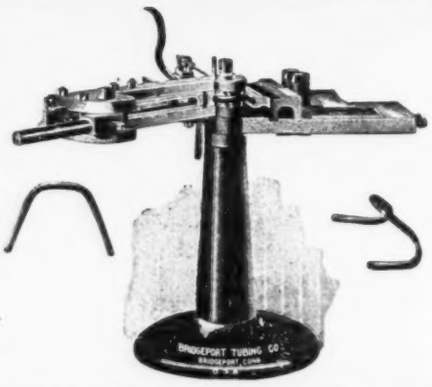

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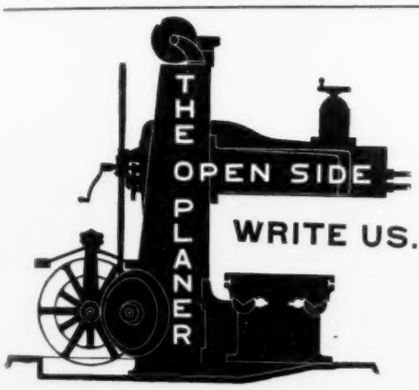

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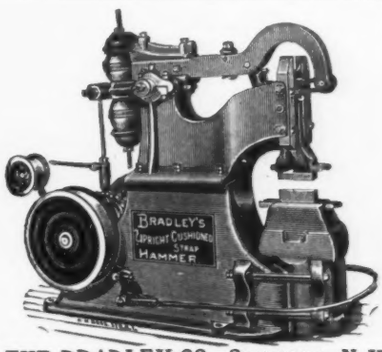

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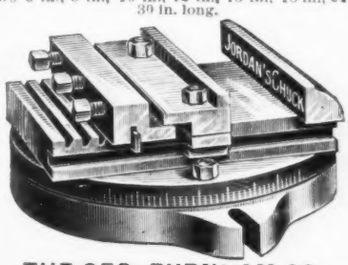

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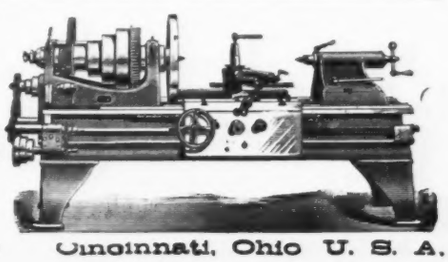

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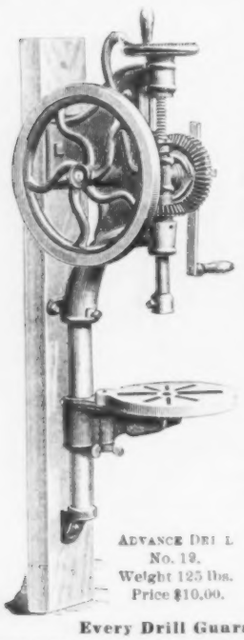

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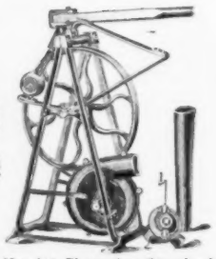
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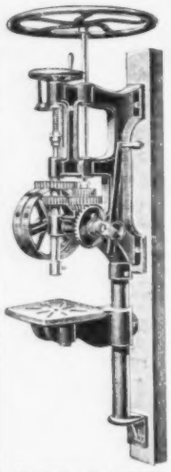
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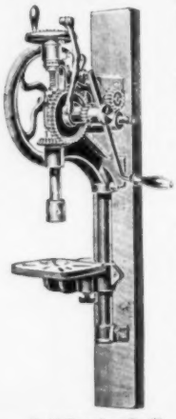
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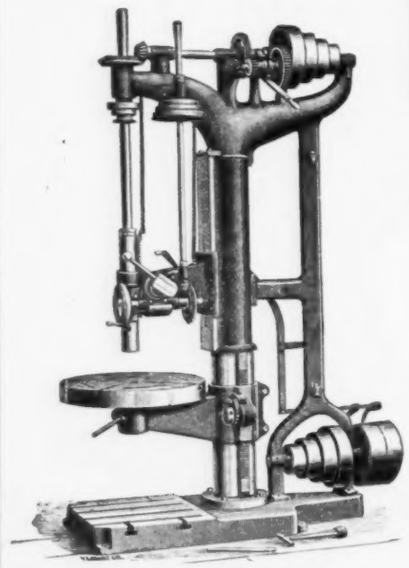

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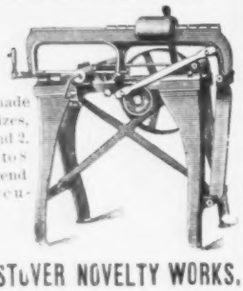

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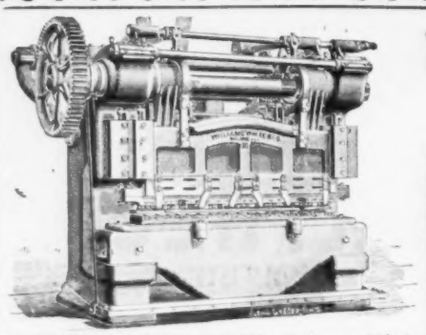

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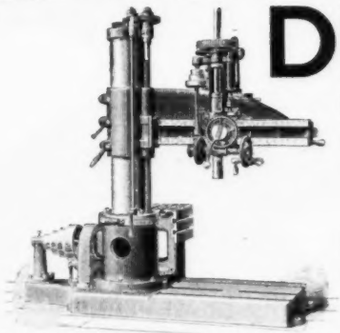

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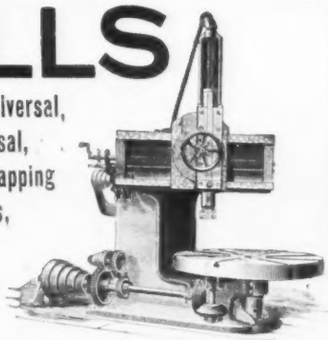

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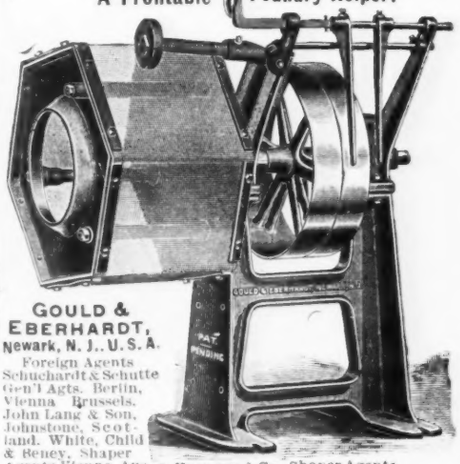

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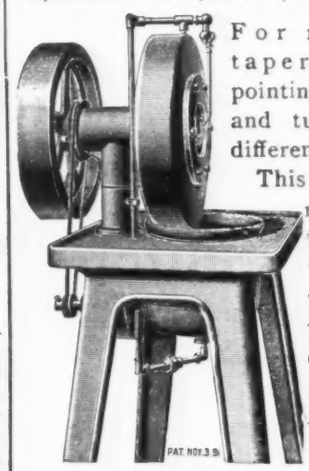

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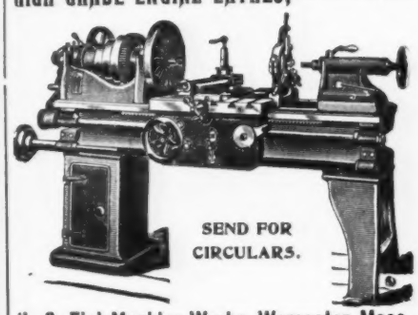

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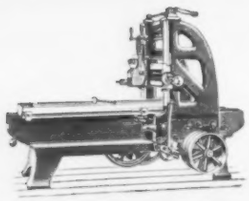

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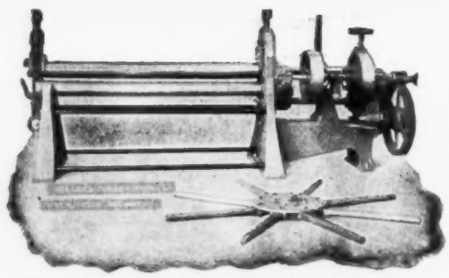

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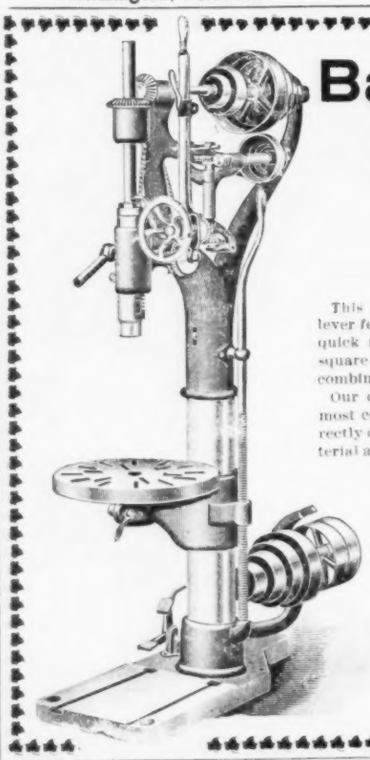

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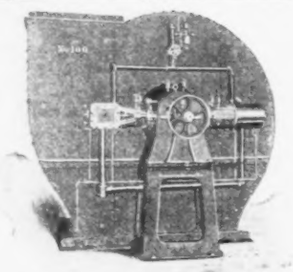

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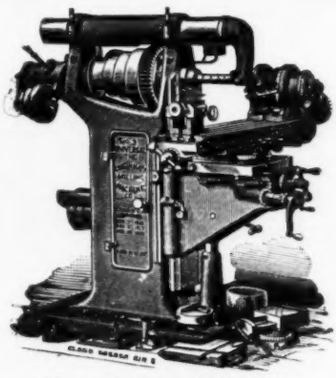

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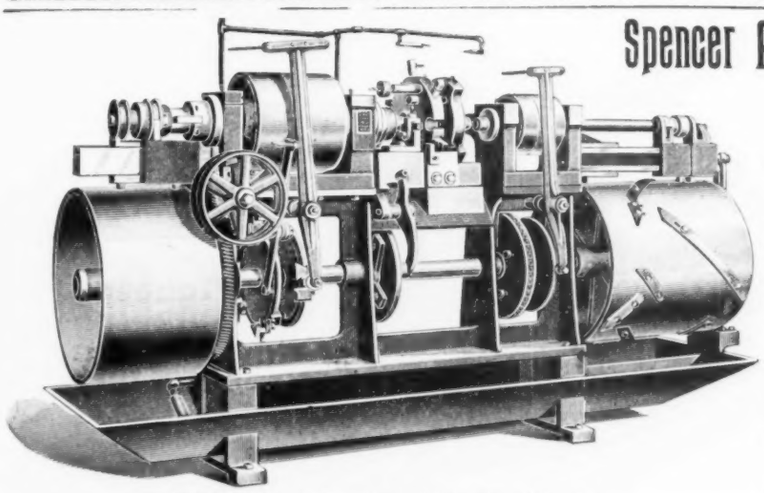

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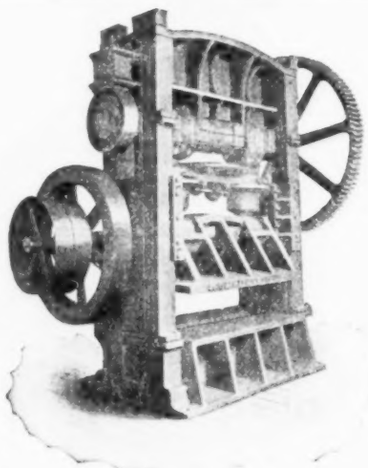

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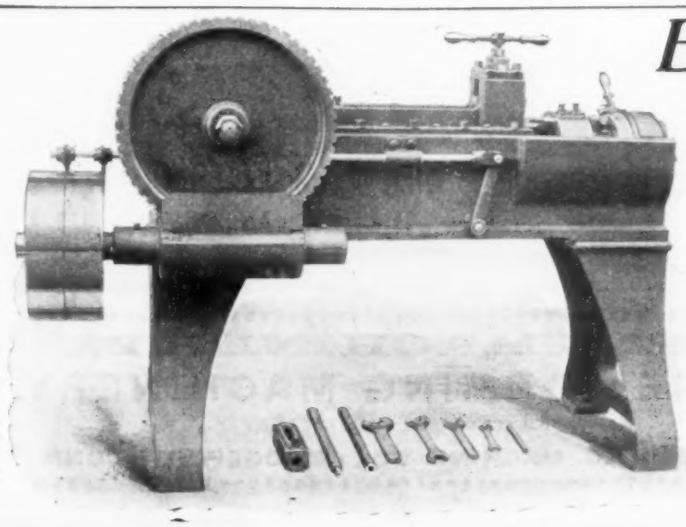

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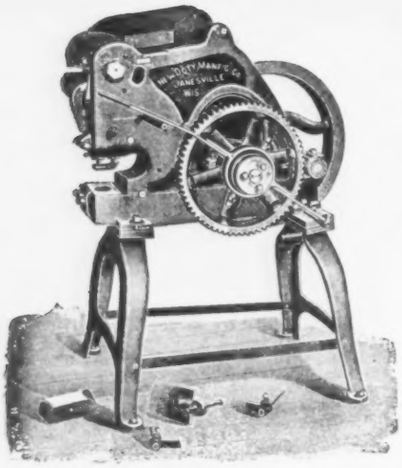

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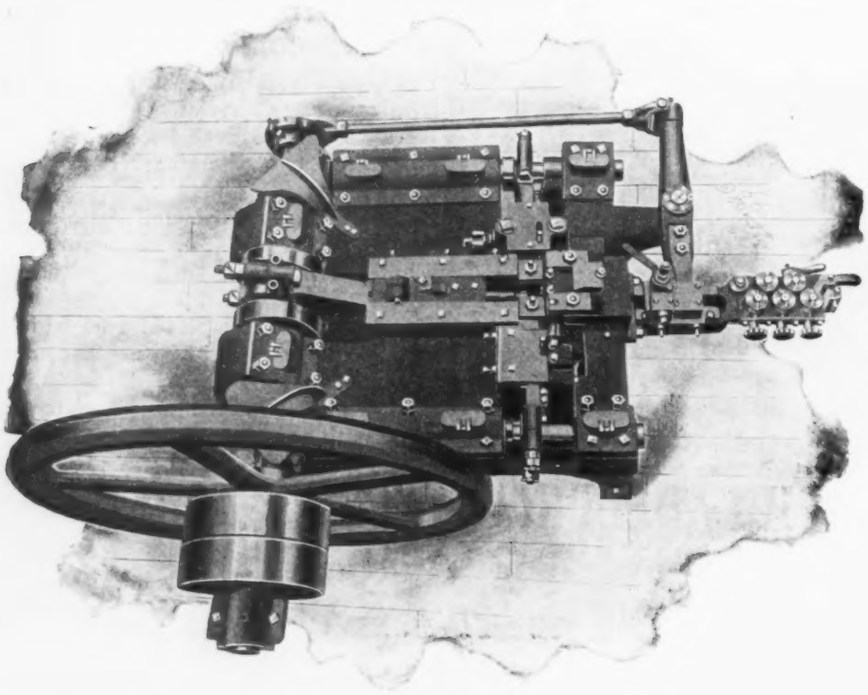

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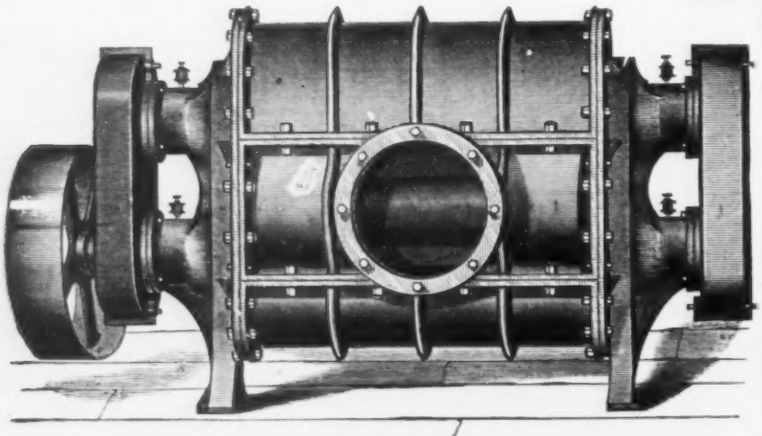

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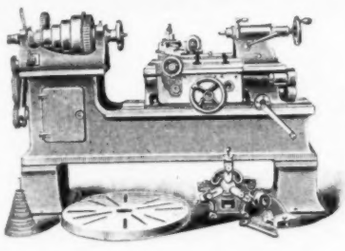

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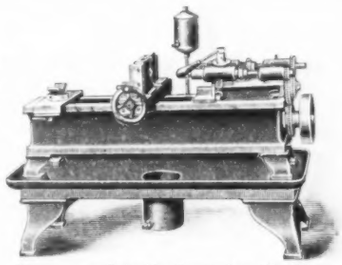

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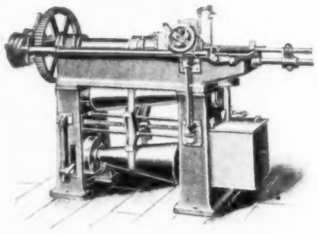

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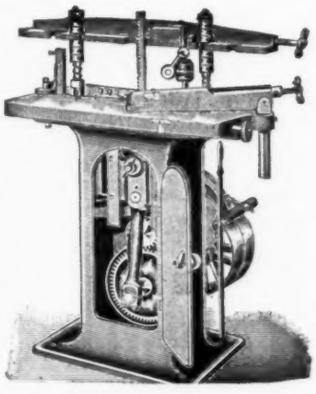

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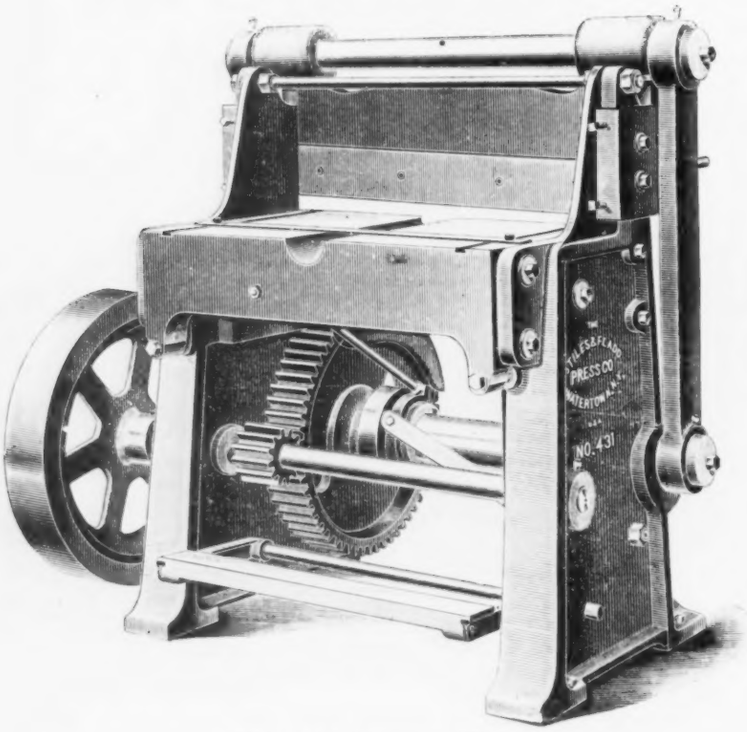

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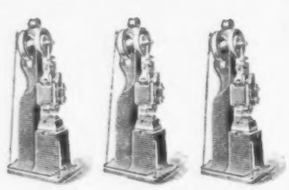

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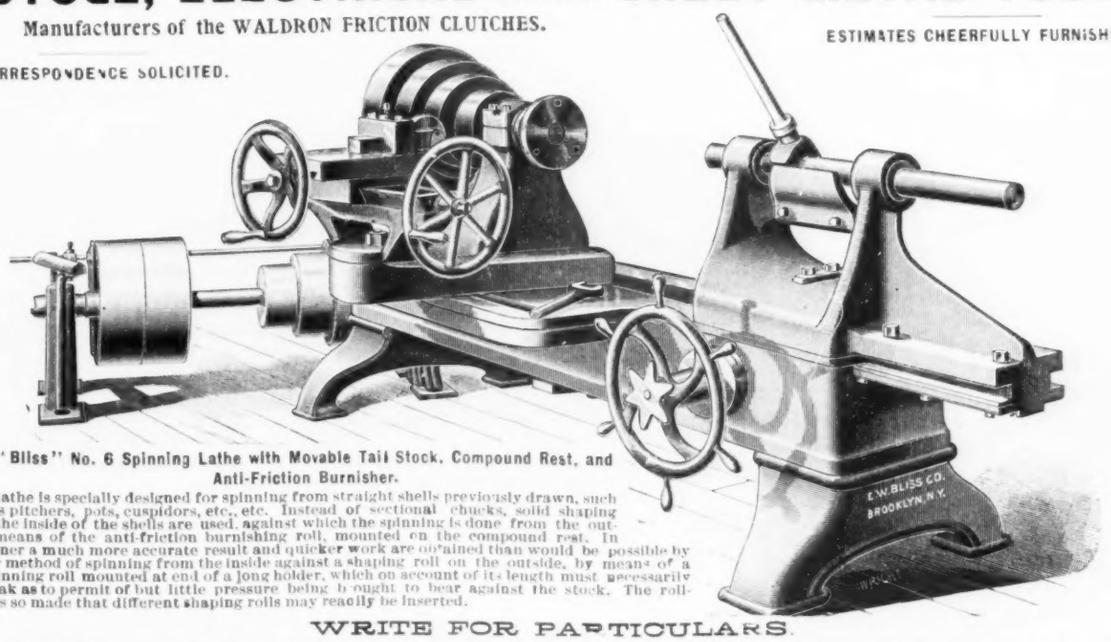

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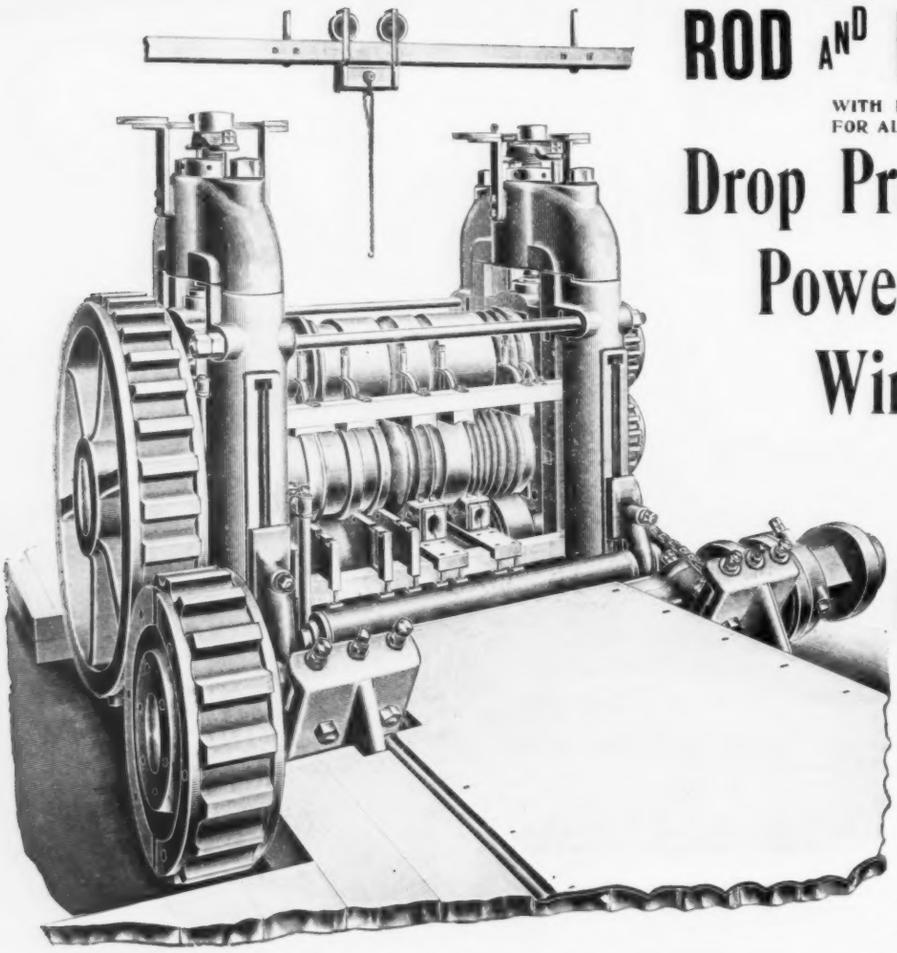

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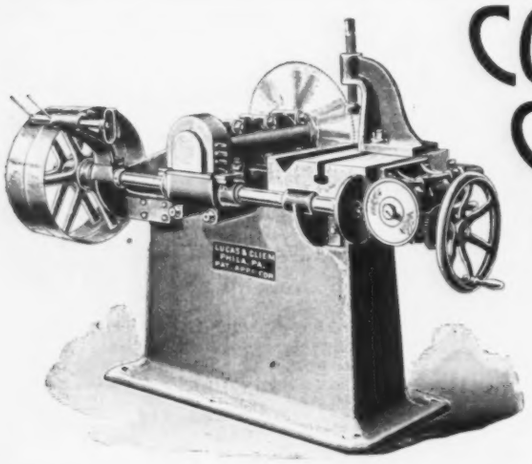

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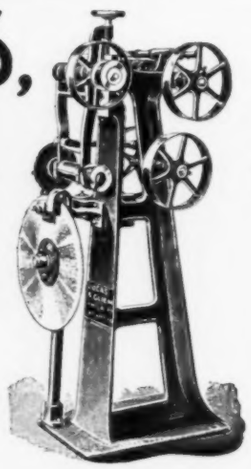

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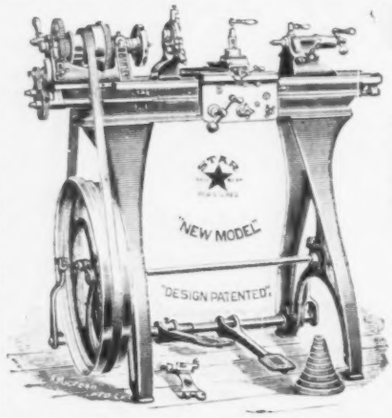

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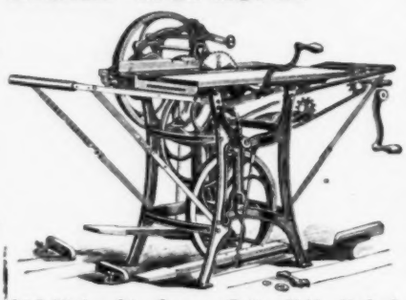

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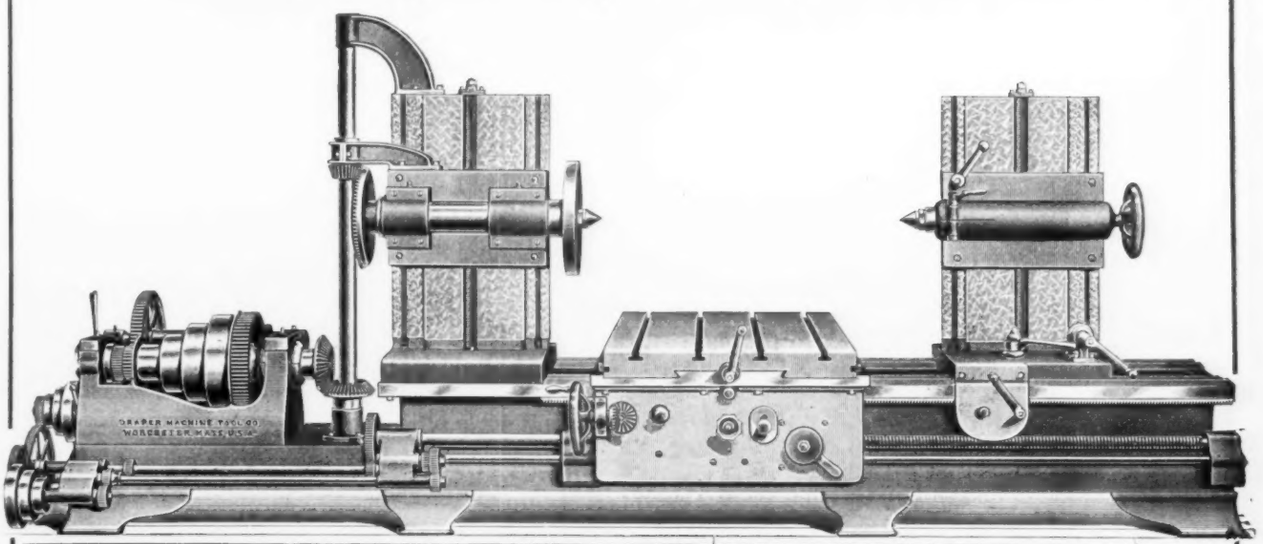

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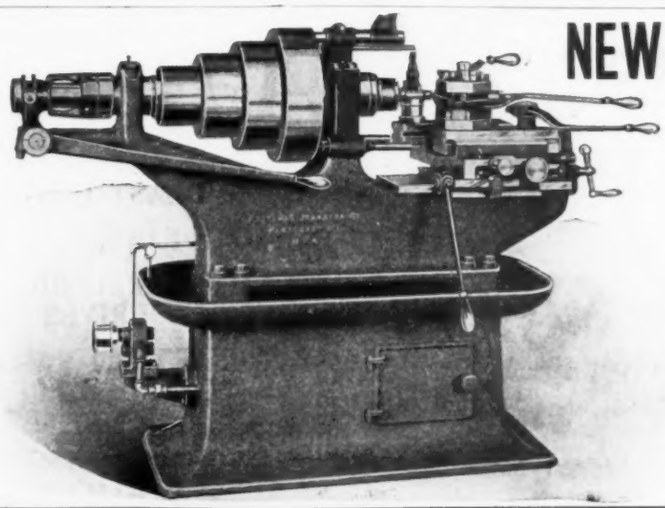

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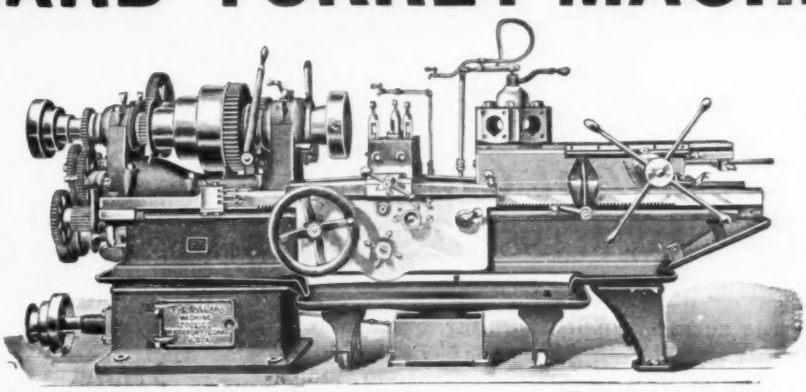

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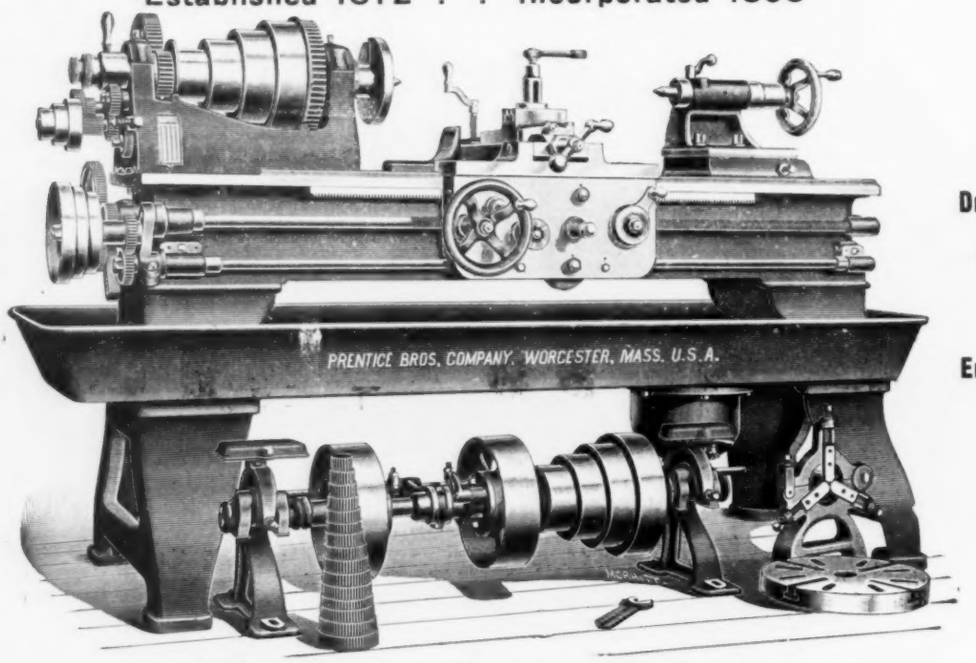

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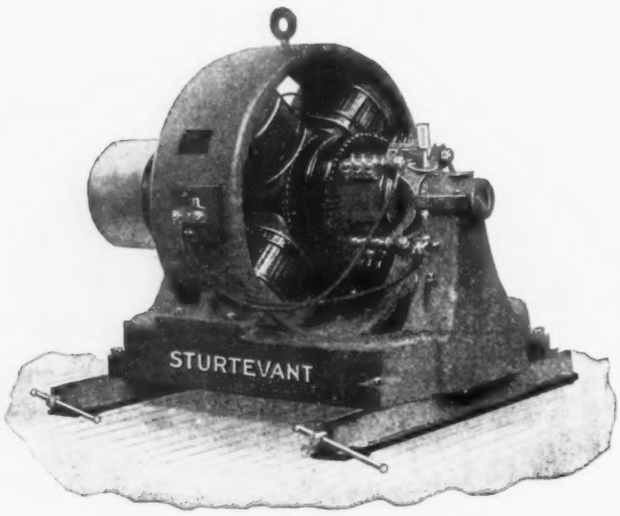

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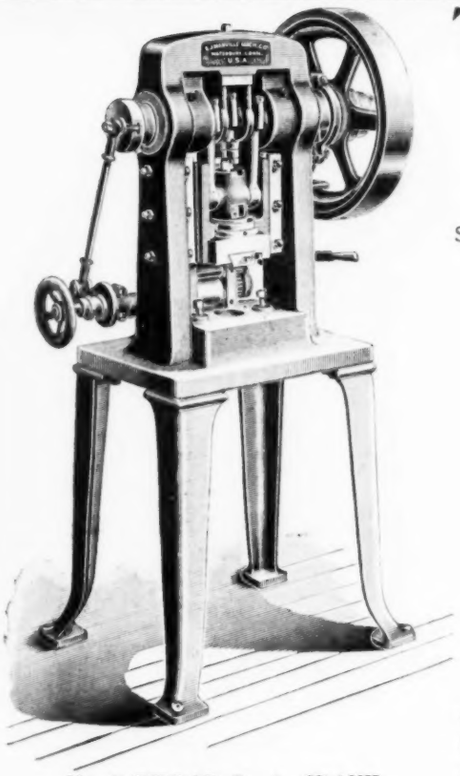

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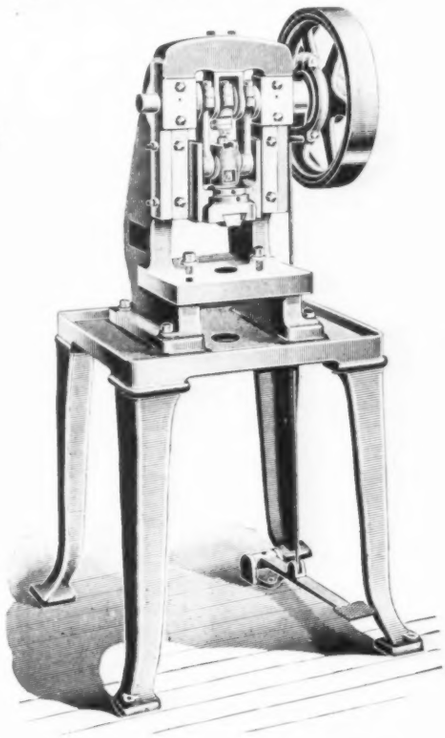

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(7) 36 in. and one standard gauge Locomotives.
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(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.
- 13 in. x 6 ft. Ames.
- 14 in. x 6 ft. Prentice.
- 16 in. x 6 ft. Ames.
- 18 in. x 12 ft. Bogart.
- 27 in. x 12 ft. W. & L.
- 16 in. x 8 ft. Pattern Maker's.

Screw Machines
- No. 2 Wire Feed.
- No. 2 P. & W., plain.
- No. 2½ P. & W., W. F.
- No. 4 Windsor, plain.
- No. 4 Windsor, W. F., auto.
- No. 2 Niles, heavy.

Planers.
- 16 in. x 16 in. x 4 ft.
- 20 in. x 20 in. x 5 ft.
- 24 in. x 24 in. x 4 ft.
- 25 in. x 25 in. x 10 ft.
- 28 in. x 28 in. x 8 ft.
- 36 in. x 36 in. x 12 ft.
- 48 in. x 48 in. x 15 ft.
- 60 in. x 60 in. x 22 ft.
- 72 in. x 72 in. x 40 ft., 3 heads.

Shapers.
- 9 in. T. H., Sellers.
- 13 in. T. H., Bement.
- 20 in. G. & E.

Drills.
- 6 Spindle, Quint.
- Pond Suspension.
- 22 in. G. & E., geared.
- 24 in. Ames, geared.
- 32 in. G. & E., geared.
- 32 in. Harris, geared.
- Combined Drill and Slotter.
- 4 spindle Ames.
- Bicycle Frame Drill.

Millers.
- Lincoln Type, P. & W.
- Hand Miller, Ames.
- Special Cam Miller.
- Double Head Cam Miller, P. & W.

Miscellaneous.
- 24 in. Lead Lap. Mch.
- No. 2 W. T. Grinder.
- Centering Machine.
- 24 in. Gear Cutter.
- 36 in. H'd Gear Cutter.
- 48 in. x 12 ft. Hor. Boring and Drill. Machine.
- 12 in. Splitting Shear.
- Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,

136-138 Liberty St., New York City.

Second-hand Machinery.

Screw Machines.
- 2 No. 1 Pratt & Whitney, wire feed.
- No. 1 Prentiss, wire feed.
- No. 1 Garvin, wire feed.
- No. 2 Prentiss, wire feed.
- No. 3 Warner & Swasey, back geared, wire feed.
- No. 2⅜ Garvin, back geared, eight hole turret.
- No. 3 Garvin.
- No. 4 Bardons & Oliver, back geared, wire feed, power feed.
- No. 6 Warner & Swasey, back geared, wire feed.
- 2 8X Jones & Lamson.
- No. 4 Windsor, back geared, power feed, wire feed.

Milling Machines.
- 3 No. 1 Cincinnati, plain.
- No. 2 Brown & Sharpe, plain, '98 pattern.
- No. 1 Garvin Universal.
- 2 No. 1 Garvin Lincoln Pattern.
- No. 5 Becker, Vertical, shop worn only.
- 3 No. 2 Garvin Hand Millers.
- No. 1 Prentiss Hand Miller, with arm.
- 22 in. x 22 in. x 4 ft. 6 in. Ingersoll, slab miller.

Lathes.
- 12 in. x 5 ft. Silk, compound rest, turret on bed.
- 14 in. x 5 ft. Flather, turret on bed.
- 2 14 in. x 6 ft. Bradford, fine condition.
- 4 14 in. x 6 ft. Flather, good order.
- 3 16 in. x 6 ft. Flather, good order.
- 16 in. x 6 ft. Fitchburg, compound rest.
- 23 in. x 10 ft. Fifield, shop worn.
- 24 in. x 12 ft. Fish.
- 30 in. x 22 ft. Lodge & Shipley.
- 36 in. x 17 ft. Powell.
- 42 in. x 19 ft., heavy pattern, second-hand.

Planers.
- 36 in. new, all lengths of bed, delivery in April.
- 7 ft. x 7 ft. x 18 ft. second-hand, good order.

Steam Hammers.
- 600 lb. Morgan, in good order.
- 1150 lb. " " " "

Marshall & Huschart Machinery Co.,

62-64 S. Canal St., Chicago, Ill.
19 S. Water St., Cleveland, O.

BARGAINS.

- 24 x 24 x 6 ft. Planer, Aldrich.
- 32 x 32 x 10 ft. " "
- 36 x 36 x 8 ft. Planer, New Haven.
- 40 x 40 x 10 ft. " Pratt & Whitney.
- 12 x 5 ft. Engine Lathe, Young.
- 17 x 8 ft. " " Wright & Smith.
- 20 x 12 ft. " " L. W. Pond.
- 24 x 21 ft. " " New Haven.
- 33 x 20 ft. " "
- 54 x 11 ft. " "
- 84 in. Radial B.G.&S F'd, Betts Mch.Co.
- No. 2 3-spindle Gang Drill, Garvin.
- No. 2 Wire Feed Screw Machine; good as new; takes 1" Stock; Costilo.
- No. 1½ Fowler Press, Stiles & Parker.

Lot of Screw Machines, Windsor make.

Automatic Screw Machines, &c., at low prices.

Can give bargains in new and second-hand machine tools at all times.

GEO. E. AFFLECK,
109 Liberty St., New York.

We Have Just Secured the Following Machinery at Arlington, New Jersey, Which Will Be Sold Low for Cash Before Removal.

ENGINE LATHES.
36 x 13 New Haven, C. R., P. C. F.
30 x 15 New Haven, C. R., P. C. F.
26 x 11 New Haven, C. R., P. C. F.
26 x 11 Plain turning.
25 x 30 Sellers shafting.
22 x 12 New Haven, C. R., P. C. F.
18 x 11 New Haven.
18 x 6 New Haven.
15 x 6 Lathe & Morse, R. & F.
13 x 5 Ames, R. & F.

PLANERS.
60 x 60 x 11 Bement.
32 x 32 x 8 New Haven.
23 x 23 x 4 L. W. Pond.

DRILLS.
38 in. New Haven, B.G., P.F.
28 in. ditto.
4 ft. Arm, Betts radial.
Thorne Portable.

SHAPERS.
13 in. Warren trav. hd. crank.
12 in. Hendey friction.

WOOD WORKING TOOLS.
25 x 16 Pattern makers' lathe.
20 x 7 Pattern makers' lathe.
30 in. Fay band saw.
24 in. Pryable surface planer.
36 x 48 rip saw table.
Wood boring machine.

MISCELLANEOUS.
4 in. bar 6 ft. table Betts horiz. boring machine.
11 in. Lowell slotter, all feeds.
75 lb. Bradley helve hammer.
2 in. Bolt cutter.
3 in. Whiton bench centering machine.
Washburn double emery grinder.
8 x 12 Beckett slide valve engine.
10 x 15 Beckett horiz. piston valve engine.
2 Horizontal boilers.
1 vertical boiler.
3 iron tumbling barrels.
1 No. 6 Sturtevant blower.
2 No. 3 " "
1 each 5 and 15 ton cupolas
1 6 ton Yale & Towne trav. crane.
1 5 ton hand crane.
1 4 " " "
1 3 " " "
1 large wood crane.
8 Harrington chain hoists.
1 shaft straightener.
12 bench vises.
Also shafting, hangers, pulleys, belting and tool room consisting of drills, taps, reamers, etc.

We also have a large stock of new and other second-hand tools and are in a position to make quick deliveries and low prices. Prices and full particulars on application.

PRENTISS TOOL & SUPPLY CO.,
115 Liberty Street, New York.
Buffalo Store, 603 D. S. Morgan Bldg.

FOR SALE.

Compound Condensing Engine, 300 to 400 H. P., must be in first-class condition.
8 ft. or 10 ft. Slabbing Milling Machine.
Air Compressor capable of pumping 200 cu. ft. of free air per minute.
Radial Drills.
2 Boring Mills, 6 ft. and 8 ft.
Flange Punch
Angle Shears to cut 6 x 6.
Plate Shears 72 in. between the housings.
Air Riveter.
Hydraulic Press 4 ft. between the housings.
2 Electric Cranes, 15 ton and 30 ton.
6 Jib Cranes, capacity 2 to 10 tons.

Address "A. C.,"
office of *The Iron Age*, 805 Fisher Bldg., Chicago, Ill.

FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

FOR SALE.

At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power.*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c. to J. Stewart Walker, Court's Agt., Lynchburg, Va.

ROLLING MILL MACHINERY FOR SALE.

1 3-high Plate Mill with extra rolls.
1 21-in. Puddle Mill with extra rolls.
9 Double Puddle Furnaces.
1 Guillotine Shear, 87 in. knives.
1 Alligator Shear, 27 in. jaw, will cut 2 in. by 12 in. steel slabs, or 5 in. axles.
1 Rotary Shear; will shear 1½ in. plates.
4 Muck Bar and Bar Iron Shears.
1 Large Steam Hammer.
2 Steam Jib Cranes.
1 Rotary Squeezer with engine, 48 in. drum.

All the above machinery is in good condition and will be sold separately. Address

JOS. H. McCLURE & SON
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AUTOMATIC MACHINERY.

Labor saving device or **hardware specialties** designed. The head designer of a leading firm will devote spare time to such work at reasonable rates. "DESIGNER," care *The Iron Age*, 115-119 So. 4th St., Philadelphia, Pa.

SECOND-HAND

Metal-Working Machinery

At Bargain Prices.

Lathes.
One 18 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 26 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.
32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.
10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.
9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Philips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N. Y. City.
Branches at Chicago and Pittsburg.

For Sale.

Sturtevant 60 in. Steam Fan and Heater, containing 1000 ft. of pipe complete with independent engine, governor, large quantity of galvanized iron pipe, etc. Good as new. Will be sold cheap. Been used only to heat an office building 2 or 3 seasons.

FLORENCE MACHINE CO.,
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ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 30 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent PALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

FOR SALE.

1 32 in. x 108 in. Plate Mill, Roughing Rolls 2 - in. x 84 in.; live tables and Vertical Table Engines.
1 Pair 36 in. x 40 in. Horizontal Reversing Engines.
1 110 in. Guillotine Plate Shear.
1 24 in. x 70 in. Blooming Mill, with 28 in. x 42 in. Reversing Engines, with gearing, tables and table engines.
1 18 in. 3-high Bar Mill.
1 20 in. 3-high Sheet Mill.
2 10 in. 3-high Guide Mills.
Engines, Shears, Punches and Cosgrove Straightener.
2 Hoisting Engines.
7 Boilers.
Engine Lathe, Roll Lathe, Planer Drill Press and Blowers.
1 10 in. Standard Gauge Locomotive Crane.
Supply and Hydraulic Pumps and Cranes.
A Large lot of other machinery such as used in large steel works.

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh, Pa.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. At order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

17 pairs Alligator and Rotary Shears cutting from one inch to six inch cold Steel Axles. Can be seen at Catasauqua, Pa.

Apply
WM. ECKBOLDS' SONS,
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For Quick Delivery.

1 Shear with Engine 126 inch, used.
1 Roll for straightening light plates, used.
1 Roll 40 inch for sheets, new.
2 Hackney Hammers.

WAIS & ROOS P., S. & ROLL CO.,
Cincinnati, Ohio.

SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, No. ¼, 3, 4, 5 and 7.
Root Blowers, No. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6½ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $350 each. Numerous machines not mentioned for want of space.

C. R. BIGELOW, 45 Dey St., New York City.

SECOND-HAND
Steam Power Hammers
AND
Power Presses
FOR SALE.
BEAUDRY & CO.,
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Second-hand Tools.

U. Baird Machinery Co.

323-325 Water St., 392-394 First Ave.,

PITTSBURGH, PA., U. S. A.

3 in. x 48 in. Hand Bending Rolls.
No. 0 Stiles & Parker Fowler Press.
No. 1 " " " "
36 in. Gould & Eberhardt Spur Gear Cutter.
No. 1 Newton Plain Milling Machine.
No. 11 Brown & Sharpe Milling Machine.
48 in. Pulley Borer.
19 in. Putnam Slotter.
100 lb. Merrill Bros Air Cushioned Hammer.
50 lb. " " " " "
24 in. Hendey Shaper.
No. 10 Sturtevant Pressure Blower.
No. 8 " Monogram Blower.
48 in. Box Radial Drill.
24 x 24 x 5 ft. Planer.
2 in. Acme Bolt Cutter.
18 in. Blaisdell Drill Press.
400 lb. Steam Hammer.
9 in. Star Foot Lathe.
Engine and Turret Lathes.

Henry A. Hitner's Sons,

Wholesale Scrap Iron & Metal Dealers, Riggers and Wreckers.

We are always in the market to buy and dismantle Iron Buildings, Bridges, Abandoned Railroads, Rolling Mills, Blast Furnaces, Ruins of Fires and all Structures of this character.

Gaul & Sergeant Sts., - Philadelphia, Pa.

CHEAP.

Cameron Pumps.
Centrifugal Pumps.
Root Blower No. 2.
Large Sturtevant Blast Wheels.
Exhaust Fan, Ventilating Fans.
Guild & Garrison Double Vacuum Pump.

Above all in **perfect condition,** used only **two weeks** and will be sold **very low.**

VARIETY MACHINE CO.,
Warsaw, N. Y.

FOR SALE.

500 up-to-date 98 wheels in lots of 25 or more. Bargain for spot cash buyers.

Address

BOX 472, Canton, O.

FOR SALE.

Four fly wheels, each 25 feet in diameter, weighing 42 tons each, built in 12 segments and two centers, with rims turned and faced. We built these wheels for our own tin mills, and after a few months' use of them replaced them with heavier wheels. Will be sold low.

MACKINTOSH, HEMPHILL & CO.,
Pittsburgh, Pa.

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
Care *The Iron Age*, 805 Fisher Bldg., Chicago.

NAIL MACHINES For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

Providence Steam Engine Company,

PROVIDENCE, R. I.

SECOND-HAND ENGINES FOR SALE.

One 12 x 36 Wheelock Engine, right hand, wheel 9 ft. diameter, 17 in. face, solid. 44 horse power.

One 23 x 60 George H. Corliss Engine, right hand, wheel 20 ft. diameter, 38 in. face, 272 horse power, 60 revolutions, $1100.

One pair 30 x 60 George H. Corliss Engines, wheel 28 ft. diameter, 90¾ in. face, 463 horse power, (per engine) $3850.

One 9 x 18 Exeter Engine, right hand, wheel 7 ft. diameter, 12 in. face, 35 horse power, 100 revolutions, $550

One 18 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 25 in. face, 175 horse power, 80 revolutions, $770.

One 20 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 26 in. face, 219 horse power, 80 revolutions, $1650.

One 12 x 36 Babcock & Wilcox Engine, left hand, wheel 10 ft. diameter, 24 in. face, 52 horse power, 70 revolutions, $330.

One 10 x 24 Rider Engine, right hand, wheel 7 ft. diameter, 14 in. face, 31 horse power, 92 revolutions, $110.

One 14 x 48 George H. Corliss Engine, right hand, 16 ft. wheel, 20 in. face, 100 horse power, 75 revolutions, $275.

The horse powers are all figured on 80 lbs. steam, ¼ cut-off. Deliveries are f.o.b Providence.

FOR SALE.

One No. 10 Bryant saw, with 20 saw blades, Q. & C. make; only used about two months; in perfect condition and will sell for a low price.

THE ASCHMAN STEEL CASTING COMPANY,
Sharon, Pa.

Texas Shop Cheap

Well equipped foundry, boiler and machine shops suitable for engine and railroad work. Contain wheel press, planers and shapers; lathes 15 to 44 in. swing up to 26 ft. bed. One and one-half acres of land. Big lot of patrons and business good the year round. Reason for selling—disability and old age.

Address A. DEMARCE, Texarkana, Texas.

FOR SALE.

We offer for sale the following plants, with all real estate, buildings, machinery, fixtures and tools complete, or we will dismantle same to suit buyers.

Danville Rolling Mills and Nail Works, Danville, Pa.
Cofrode & Saylor Bridge Works, Pottstown, Pa.
Rolling Mills A and B, Catasaqua, Pa.
Rolling Mill C, Fullerton, Pa.
Irondale Furnace, Independence, W. Va.

These plants contain over 7,000 tons of machinery and equipment of every description.

C. R. BAIRD & CO.

Pig Iron,
Philadelphia, Pa.

Tack Machines For Sale.

Two Machines, 6 to 24 oz.
One Machine, 0 to 8 oz.
One Machine, 8 to 24 oz.
Also Shear for trimming stock.

Have been but little used; are as good as new.

ANDREW F. WEST,
Buffalo, N. Y.

FOR SALE.

Rolling Mill at Bristol, Pa., well equipped for making Bars, Band and Hoop Iron.

RODMAN WISTER,
Trustee,
672 Bullitt Bldg., Philadelphia, Pa.

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for *immediate operation*, consisting of *complete Skelp Mill*,

6 Double puddling furnaces,
3 Heating furnaces,
3 Trains of rolls; also
2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

The Blast Furnace with this property will be dismantled. The Blowing Engines, Pumps, Dynamo, etc., are for sale.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

For particulars address the Secretary of The Board of Trade, Worcester, Mass.

Capital to Invest.

Correspondence is invited by a party of Capitalists lately identified with the Iron and Steel business, from any manufacturer who has an established business and desires additional capital, or wishes to dispose of his property. Others who have articles of merit and desire to sell, or require more capital, are requested to communicate with us by addressing communications to "W. L. G.," care *The Iron Age*, New York.

FOR SALE
Bessemer Plant and Blooming Mill

of the North Branch Steel Company.

Plate Mill For Lease

SITUATED AT : : : : DANVILLE, PA.

The Steel Plant is entirely new and practically ready for operation; it contains two 5-ton vessels and a 32-in. reversing Blooming, Slabbing and Billet Mill. If desired, its 28-in. Plate Mill, which is situated only a short distance from the Slabbing Mill, could be leased.

Danville is on the line of the Catawissa Branch of the P. & R. R. R. and the Bloomsburg Branch of the D., L. & W. R. R.; is directly across the river from and connected by bridge with South Danville through which a branch of the P. R. R. runs, and is within 12 miles by rail of Northumberland, through which the Northern Central Branch of the P. R. R. passes.

There is a good home market for a part of the product of the above plant, and the starting of it up would make Danville an excellent location for a Tin Plate Works. Full information may be obtained of

THE NORTH BRANCH STEEL COMPANY,
25th St. and Washington Ave., · PHILA., PA.

FOR SALE.
Two Blast Furnace Blowing Engines.

MODERN DESIGN,
GOOD MAKE,
BUT LITTLE USED,
IN GOOD CONDITION.

84 in. Blast Cylinders, 4 ft. Stroke.
40 in. Steam Cylinders.

PRICES VERY ATTRACTIVE.

Inquire of

H. W. ALLISON, Treas.,
Allentown, Pa.

A GENTLEMAN

with well equipped office, stenographer, city salesman etc., in Chicago, and having extended acquaintance with general managers, engineers and purchasing agents of Western railways, would like to represent manufacturers. Address "P. R. P.," care *The Iron Age*, 86 Fisher Bldg., Chicago, Ill.

PITTSBURGH
SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.
No. 8 Wood St.,
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We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business.

Address

HERO STAMPING WORKS,
Room 407, Cuyahoga Bldg., Cleveland, O.

Locations for Industries.

The Chicago Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y,
Old Colony Building, Chicago, Ill.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

WIRE WANTED

Any one having Coarse Wire (Iron or Steel), odd lots, size from No. 3, wire gauge, to No. 16 long pieces, they would like to sell, write to

The Horace Lamb Wire Co.,
Northampton, Mass.

TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address

"H.,"
office of *The Iron Age*, 70 Kilby St., Boston, Mass.

Manufacturers

of Bicycle Sundries, Hardware Specialties, etc. desiring live representation throughout the **World** are requested to communicate with A1 New York City House by addressing

"T. M.," No. 32,
Care *The Iron Age*, New York.

SALESMEN WANTED

in every State in the Union who visit the manufacturers of Dynamos and Motors, Electrical Street Railways, Electrical Repair Shops, Electrical Supply Jobbers, to take our line of Insulation on Commission. Good live salesmen can add twelve to fifteen hundred dollars per year to their incomes. All necessary samples can be carried in pocket.

W. H. SILLS MICA CO.,

60, 62, 64 Michigan Ave., Chicago.

ENGINES. DYNAMO.

1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in. tubes, Locomotive Boiler.
1 50 to 80 H. P. Westinghouse Compound Engine.
1 500 Light Multi-Polar Dynamo, 550 revolutions.

JOHN RAMMING MACHINE WORKS,
Main St. and Clark Ave., St. Louis, Mo.

TYPEWRITERS.

We will exchange typewriters, all guaranteed, and send subject to trial, in exchange for merchandise. What will you offer?

BROWNE & MANSFIELD, 245 Broadway, New York.

Blast Furnaces For Sale.

I have for sale five blast furnaces, one in Virginia, one in Pennsylvania, one in Tennessee and two in Alabama. Some of these furnaces own their own coal, coke ovens and ore and could be started up very quickly. They can be sold **far below the original cost.** Three of these are strictly modern furnaces.

For particulars address

J. H. HILLMAN,
No. 8 Wood Street, Pittsburgh, Pa.

WANTED.

Shears and Angle Straightening Machines.

Two good Shears to cut bushelling scrap and also a good Angle Straightening Machine to straighten up to 4 in. x 4 in. angles. Give full particulars and prices.

"MACHINERY,"
Care *The Iron Age*, New York.

IRON FOUNDRY FOR SALE OR TO LET.

No. 884 and 886 Metropolitan Ave., Brooklyn.
WILLIAM T. GRAFF,
229 Broadway, New York City.

NO. 32 CLIFF ST.,

four story brick building, to let from May 1; suitable for the iron business.
CHARLES S. BROWN, 59 Liberty St., N. Y.

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GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

Address, "M. M. N.,"
office of *The Iron Age*, New York

FOR SALE.

An old established jobbing and retail stock of hardware, in a prosperous Western city of 20,000 people and a railroad center. Established in 1866 and the owner now wishes to retire, after 33 years' continuous and prosperous business. Will be sold cheap. No trade. Address "No. 117," care *The Iron Age*, Commercial Building, St. Louis.

Of Interest to Capitalists.

A competent mechanical engineer or machinery salesman with capital to take an interest in a live concern with a good line of standard tools who desire to add another large line. A splendid opportunity. Address

"STANDARD TOOLS,"
22 Pickering Bldg., Cincinnati, Ohio.

LOUIS MESIER, Auctioneer.

Executor's Sale to Close an Estate

OF

Valuable Coal, Timber & Farming Lands

In Somerset County, Pa.

6,000 ACRES MORE OR LESS.

ADRIAN H. MULLER & SON

will sell at auction on

TUESDAY, APRIL 4th, 1899,

At 12 o'clock noon, at the N. Y. Real-Estate Salesroom, No. 111 Broadway, New York City.

This property is about 2¾ miles west of WEST SALISBURY STATION on the SALISBURY BRANCH, BALTIMORE AND OHIO R. R., which is a good shipping point; the Railroad having surveyed for an extension of their road to within ¼ mile of these lands, makes it easy of access. The Mutual Telegraph Co. run over the lands around the public roads.

THESE LANDS are underlaid with BITUMINOUS COAL, FIRECLAY, IRON ORE and LIMESTONE, and have a fair average of the several kinds of Timber grown in this section, viz.: WHITE OAK, RED OAK, HEMLOCK, ROCK OAK, ASH, POPLAR, CHERRY, BLACK BIRCH, CHESTNUT, etc.

After the timber is cleared off, will make good farming and grazing lands, being well supplied with running streams.

THE ATTENTION OF COAL COS., IRON AND COAL MINERS, AND RAILROAD COS., ALSO CAPITALISTS, IS CALLED TO THE SALE OF THIS PROPERTY.

50 PER CENT. may remain on **BOND AND MORTGAGE** at 5 per cent. interest for One Year or all cash if desired. **Reports** of **E. V. D'Anvilliers, Geologist** and **Mining Engineer,** of **Philadelphia,** and other particulars can be had at the **Auctioneers'** office, **24 Pine Street, N. Y. City.**

WANTED.

Jobs and Specials for SPOT. Send particulars.

BROWNE & MANSFIELD,
245 Broadway, New York.

FOR SALE!!

PATTERNS OF BOILER TOOLS,

Including Patents, Drawings and Business of two improved Tools now in use in the Largest Boiler Shops in the country. Home and Foreign Trade established. Other business demands attention.

Address Lock Drawer No. 19,
LIBERTY, IND.

FLY WHEELS.

One 11 foot, in halves, 10 tons weight. One 8¼ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

AMERICAN RAILWAY SUPPLY COMPANY,

Manufacturers of

Baggage, Hotel and Time Checks, Metal Figures and Letters and everything in the line of Stamped Metal Work.

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E. BISSELL & CO.,

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HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

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FITCHBURG MACHINE WORKS.
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Large stock always on hand.
☞ Send for list of Second Hand Machinery.

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612 Arch St., Philadelphia.

A Rare Bargain.

A double cylinder Hoe newspaper printing press, with two folders in fine order, for sale at a bargain.

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Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.
Telephone Call, 897 18th St.

Morton B. Smith,

243 FRONT ST., NEW YORK.

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 54 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
800 tons 60 lb. first class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

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9-15 Swift Building, Cincinnati, O.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

WM. H. PERRY CO.,
Providence, R. I.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited.
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Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address

DR. M. E. WADSWORTH, President,
Houghton, Michigan.

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for *immediate operation,* consisting of *complete Skelp Mill,*

6 Double puddling furnaces,
3 Heating furnaces,
3 Trains of rolls; also
2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

The Blast Furnace with this property will be dismantled. The Blowing Engines, Pumps, Dynamo, etc., are for sale.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

For particulars address the Secretary of The Board of Trade, Worcester, Mass.

Capital to Invest.

Correspondence is invited by a party of Capitalists lately identified with the Iron and Steel business, from any manufacturer who has an established business and desires additional capital, or wishes to dispose of his property. Others who have articles of merit and desire to sell, or require more capital, are requested to communicate with us by addressing communications to "W. L. G.," care *The Iron Age*, New York.

FOR SALE
Bessemer Plant and Blooming Mill

of the North Branch Steel Company.

Plate Mill For Lease

SITUATED AT : : : : DANVILLE, PA.

The Steel Plant is entirely new and practically ready for operation; it contains two 5-ton vessels and a 32-in. reversing Blooming, Slabbing and Billet Mill. If desired, its 28-in. Plate Mill, which is situated only a short distance from the Slabbing Mill, could be leased.

Danville is on the line of the Catawissa Branch of the P. & R. R. R. and the Bloomsburg Branch of the D., L. & W. R. R.; is directly across the river from and connected by bridge with South Danville through which a branch of the P. R. R. runs, and is within 12 miles by rail of Northumberland, through which the Northern Central Branch of the P. R. R. passes.

There is a good home market for a part of the product of the above plant, and the starting of it up would make Danville an excellent location for a Tin Plate Works. Full information may be obtained of

THE NORTH BRANCH STEEL COMPANY,
25th St. and Washington Ave., - PHILA., PA.

FOR SALE.
Two Blast Furnace Blowing Engines.

MODERN DESIGN,
GOOD MAKE,
BUT LITTLE USED,
IN GOOD CONDITION.

84 in. Blast Cylinders, 4 ft. Stroke.
40 in. Steam Cylinders.

PRICES VERY ATTRACTIVE.

Inquire of

H. W. ALLISON, Treas.,
Allentown, Pa.

A GENTLEMAN

with well equipped office, stenographer, city salesman etc., in Chicago, and having extended acquaintance with general managers, engineers and purchasing agents of Western railways, would like to represent manufacturers. Address "P. R. P.," care *The Iron Age*, 805 Fisher Bldg., Chicago, Ill.

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SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

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We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business.

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The Chicago Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
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FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

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Any one having Coarse Wire (Iron or Steel), odd lots, size from No. 3, wire gauge, to No. 16 long pieces, they would like to sell, write to

The Horace Lamb Wire Co.,
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TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address

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of Bicycle Sundries, Hardware Specialties, etc. desiring live representation throughout the **World** are requested to communicate with A1 New York City House by addressing

"T. M.," No. 32,
Care *The Iron Age*, New York.

SALESMEN WANTED

in every State in the Union who visit the manufacturers of Dynamos and Motors, Electrical Street Railways, Electrical Repair Shops, Electrical Supply Jobbers, to take our line of Insulation on Commission. Good live salesmen can add twelve to fifteen hundred dollars per year to their incomes. All necessary samples can be carried in pocket.

W. H. SILLS MICA CO.,
60, 62, 64 Michigan Ave., Chicago.

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1 New 14 in. x 36 in. Right Hand Corliss Engine.
1 New 54 in. x 18 ft., 60 3-in. tubes, Locomotive Boiler.
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AMERICAN RAILWAY SUPPLY COMPANY,

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FITCHBURG MACHINE WORKS.
P. BLAISDELL & CO.
BRADFORD MILL CO.
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CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second Hand Machinery.
JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia.

A Rare Bargain.

A double cylinder Hoe newspaper printing press, with two folders in fine order, for sale at a bargain.

WALSH'S SONS & CO.
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.
Telephone Call, 897 18th St.

Morton B. Smith,

243 FRONT ST., NEW YORK,

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.
Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 54 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first-class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.
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300 tons 56's.
70 " 60's.
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Providence, R. I.

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SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

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Scrap Iron and Steel.

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C. BOTJER, 405 Newark St., Hoboken, N. J.

MICHIGAN COLLEGE OF MINES.

Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address
DR. M. E. WADSWORTH, President,
Houghton, Michigan.

FOR SALE.

A miscellaneous lot of iron buildings, not including sides or roof covering, as follows:

One building, 80 ft. span, 242 ft. long, 16 ft. high to under chord of truss; shed addition 20 ft. wide.

One building 80 ft. wide (in two spans), 114 ft. long, 16 ft. high to bottom chord ventilators.

One building 120 ft. wide, 352 ft. long, with center posts. Ventilator 16 ft. to bottom chord.

One building 120 ft. wide, 124 ft. long, 20 ft. to bottom chord center posts.

One building 65 ft. wide, 176 ft. long, 37 ft. high to bottom chord.

One building 65 ft. wide, 106 feet long, 37 ft. to bottom chord.

One building 36 ft. wide, center span, 27 ft. high to bottom chord, with a 70 ft. lean-to on each side; total width of building 176 ft.; height of lean-to 12 ft. under chord; length of this building 198 ft.

One building like above, 260 ft. long.

Also 20 tubular 60 in. diameter 16 ft. long boilers with independent stack to each, set in two batteries, with feed pumps, heaters, stokers, connections, etc.

Eight Galway boilers 84 in. diameter, 28 ft. long.

A miscellaneous lot of upright engines, both double and single cylinders, from 10 to 100 horse power.

Twelve Smythe producers with valves, cooling tubes, etc.

For further information address

WM. D. HARTUPEE, Chief Engineer,
Pittsburgh Plate Glass Co.,
Carnegie Bldg., Pittsburgh, Pa.

INVESTIGATE.

Drop Presses.

One E. W. Bliss 800 lb. Automatic Board Drop, fitted with hand and foot treadle, no poppets, hammer and anvil dovetailed to hold dies, construction similar to Bliss Drop shown on page 242 of their new catalogue, in good order.

One E. W. Bliss 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, hammer and anvil dovetailed to take dies, similar to above description, in good order.

One Morrill Brothers 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, also steel uprights, has 6 ft. drop, with one extra hammer weighing 1,700 lbs., hammer and anvil fitted with dovetail to take dies, in good order.

Ready for Delivery May 1st, 1899.

One Arch Power Press with Dial Feed. Good Order.

One three spindle Lathe, 12 in. x 6 in. swing, 8 ft. bed, no countershaft. Good Order.

One Quint Drill, Turret Head. In A1 Order.

One Tapping Machine. In A1 Order.

One Automatic Milling, Drilling and Tapping Machine for finishing battery zincs. Can be adapted for other work of a similar character. In A1 Order.

One Semi-Universal Milling Machine, Mossberg Make. In A1 Order.

MOSSBERG & GRANVILLE MFG. CO.,
PROVIDENCE, R. I.

For Sale.

Second-hand Open Side Extension Planer.

Intending to put a large planer in its place, we will sell our 48 in. high x 20 ft. long Open Side Extension Planer now running in works for $2750 f.o.b. Baltimore. It has four heads, two on the cross rail and one on each post. In good order; can be seen any day at our works.

The DETRICK & HARVEY MACHINE CO.,
Baltimore, Md.

ROLLING MILL

For Sale or Lease.

The property known as the Seyfert Rolling Mills is offered for sale or lease.

This Mill is located on the Wilmington & Northern R. R., five miles from Reading, Pa., and is equipped for making Sheared Pipe Skelp, Sheet Iron, Plate Iron and Puddled Bars.

The property is in perfect condition and can be started up in 24 hours time. Is, without doubt, one of the best mills in the state; has always been a money-maker and should prove a very desirable and profitable investment to anyone desiring to go into the iron business.

This Mill would be indispensable to the Wrought Iron Pipe Trust now forming.

For terms or particulars, apply or address

SAM'L R. SEYFERT & BRO.,
Reading, Pa.

For Sale.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & Bodley Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 12 x 34 Brown Automatic Engine.
1 30 x 30 x 8 Whitcomb Planer.
1 50 in. Stevens Pulley Lathe.

WICKES BROS., Saginaw, Mich.

WANTED.

Second-hand Lathe, to swing 48 in to 60 in. over ways and to take in 72 in. or more between centres. Address with complete description and price.

DILLEY FOUNDRY CO.,
Pine Bluff, Ark.

WANTED.

84 in. Cupola and No. 10 Sturtevant Blower. Send full description and price. Address

"CUPOLA,"
care *The Iron Age*, New York.

REPRESENTATIVE WANTED.

A large PUMP MANUFACTURER requires a representative in the Pittsburgh district. To a party able to handle this line of business and command a good trade, a liberal commission will be paid.

"COMMISSION,"
office of *The Iron Age*, 117-119 So. 4th St., Phila.

For Sale.

Tanks, all sizes.
Machinery of all kinds.
Sold, bought or exchanged.

WM. ECKBOLDS' SONS,
711 E. Girard Ave., Philadelphia.

PLANER
For Sale Cheap

Second-hand and in first-class condition. Made by PRATT & WHITNEY. 40 in. x 40 in. x 10 ft. Can be seen at the factory of

THE YALE & TOWNE MFG. CO.,
Stamford, Conn.

BUSINESS OPPORTUNITY.

A practical young man wanted to invest in one-half interest in an old established manufacturing house in Northern Ohio. Object, aid in managing and sales. Good salary. Best of references. Address with reference,

"BUSINESS OPPORTUNITY,"
care *The Iron Age*,
312 Cuyahoga Building, Cleveland, O.

WANTED

Six spindle Turret Lathe about 18 in. by 6 ft., also No. 5 Geared Power Press. State condition and price.

PULLMAN SASH BALANCE CO.,
Rochester, N. Y.

THE City of Haricon, Wisconsin needs a new factory to employ not less than 100 men. Bicycle factory preferred. Good location. Three branches of railroad. City can give bonds. Business men will buy shares if necessary. Write quick to "MAYOR," Haricon, Wisconsin.

Wanted to Buy.

Good second-hand Sturtevant Pressure Blower, No. 7 or No. 8. Also Engine Lathe with 18 in. swing and 8 foot bed. Must be in good condition and cheap. Address, with full description and lowest cash price,

T. L. PAINE, Mgr.,
P. O. Box 308, Milwaukee, Wis.

FOR SALE.

18 H. P. Globe Gasoline Engine in first-class order.

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One 22 x 42 Wright Corliss Engine in very good condition.

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12 1/8 in. Adt Riveters, practically new.
2 15 in. x 6 ft. Sebastian Lathes, compound rest and chucks.
1 20 in. x 12 ft. Putnam Lathe, compound rest.
1 20 in. x 12 ft. " " rise and fall rest.

Write us for prices on these or any other machinery you may be interested in.

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WANTED.

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Wrought Scrap Iron, Cast Scrap Iron and Old Horse Shoes.

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Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

By a thoroughly established foundry and machine company, a man who is competent to make estimates on castings, keep books or travel, if necessary; one willing to take small interest in the business, if satisfied with the conditions, preferred. Address "X. Y. Z., No. 39," care *The Iron Age*, New York.

First-class TRAVELING SALESMAN; reference; experience selling felt roofing, tar products and steel roofing; Southeastern States. Address "Roofing Manufacturer," Lock Box No. 2, Atlanta, Ga.

A SALESMAN, visiting the retail hardware trade of the States of Minnesota, Wisconsin and Michigan, to take in as a side line a line of axes on commission. Address "Axes," care *The Iron Age*, New York.

A competent HAMMERMAN for hammering wagon axles and doing other work in an axle shop. Address, with full particulars as to age, experience, pay, &c., Pacific Axle Company, 418 Mission street, San Francisco, Cal.

First-class MECHANICAL DRAFTSMAN; a knowledge of electrical generators and motors will be considered of advantage, but the prime essential is thorough experience on high grade machinery. Address "G. M., 39," care *The Iron Age*, New York.

FOUNDRY FOREMAN by concern of high standing in Western New York; only ten molders, but will pay good wages to competent man who is able to get out first-class machine castings at reasonable cost, and can handle help to advantage; steady position. Address, with full particulars, "Steady," care *The Iron Age*, New York.

A first-class DRAFTSMAN; one familiar with rolling mill machinery, sugar mills and general transmission machinery; give age, experience and salary required. Address Farrel Foundry & Machine Company, Ansonia, Conn.

AN EXCEPTIONAL SIDE LINE for oil, mill supply men and others who call on manufacturers regularly; full commission advanced on *bona fide* orders for our bar belt dressing; free sample and details to applicants who give satisfactory references. Address Stephenson Mfg. Company, Albany, N. Y.

A BUILDERS' HARDWAREMAN; one thoroughly posted in all branches of the trade pertaining to builders' requirements, and capable of taking off and making estimates on architects' plans; must be of exceptionable character and have A1 references. Address "Hardware," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

DRAFTSMAN on mill and machine shop work wanted; state salary wanted and experience. Address "Manganese," care *The Iron Age*, New York.

MECHANICAL DRAFTSMAN wanted, with good experience in general machinery; a competent and practical detail designer of the various kinds of work that may be wanted in a large steel works; give particulars about experience, age, least salary considered and references. Address "Draftsman, 512," care *The Iron Age*, New York.

STOCKER wanted to take contract to put up straight and box piles for three finishing trains at a mill in Central Pennsylvania; contract to be by the ton; state experience and price expected. Address "Stocker," care *The Iron Age*, New York.

By large machine works in Germany, a thoroughly competent DESIGNER of large lathes, planers and large boring mills; applicants must be well acquainted with best American practice and must also be posted on the operation of these machines; knowledge of German not essential; give full particulars as to experience, age and salary expected. Address "Lathe Designer," care *The Iron Age*, New York.

DRAFTSMAN of experience and ability for general furnace and mill work at large steel works in Western Pennsylvania; applicants should be able to design, estimate and detail rapidly and accurately; permanent positions for satisfactory parties. Address "Ingot," care *The Iron Age*, New York.

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Undisplayed Advertisements for Situations Wanted not exceeding twenty-five words Fifty cents each insertion. Additional words two cents each.

STEEL WORKS position, outside or office, desired by graduate in metallurgy; experienced in charge of construction work, also acquainted with all details of the manufacture of steel castings; open for engagement March 20. Address "South," care *The Iron Age*, New York.

HARDWAREMAN of ability, with 14 years' experience in wholesale and retail trade, also thoroughly competent officeman and bookkeeper, willing to work hard in any position, desires a situation with some good firm where ability and faithfulness are appreciated; can furnish A1 references. Address "Hardwareman," care *The Iron Age*, New York.

TIMEKEEPER, well experienced, can adjust piece work prices, thoroughly familiar with operations of a machine shop, having been employed in that business for past 12 years, wants position in New York or Brooklyn; best of references. Address "W. S.," care *The Iron Age*, New York.

Energetic young man, having well equipped office in business district of New York, perfectly familiar with machine shop and conversant on mechanical production, wants to represent some manufacturing concern; anything in hardware, bicycle, novelty, or mechanical line; can appoint agents if wanted. Address Room 17, 115 Nassau street, New York.

BRASS SALESMAN, long experience, large acquaintance, open for position; $2800 and expenses. Address "T. P. L.," care *The Iron Age*, New York.

A middle aged man, with large experience in the management of blast furnaces, coke ovens and iron ore mines, is open to an engagement; unexceptional references; correspondence solicited. Address "M. J.," care *The Iron Age*, New York.

Rolling mill and steel work managers are invited to correspond with MECHANICAL ENGINEER of large experience in high tonnage continuous hoop bar and guide mills, improved continuous furnaces, producers and steel works machinery; good record as chief engineer and superintendent of machine shop; good reasons for desiring a change. Address "Progress," care *The Iron Age*, New York.

Practical MECHANICAL ENGINEER, experienced in selling machinery, desires engagement, salary or commission, with reputable machine builders appreciating ability. Address "Solicitor," care *The Iron Age*, New York.

BLAST FURNACE SUPERINTENDENT, with practical experience in foundry, Bessemer and basic irons, is open to engagement; best references as to ability and personal character. Address "F. S.," care *The Iron Age*, 805 Fisher Building, Chicago, Ill.

SCIENTIFIC BLAST FURNACE MANAGER of 12 years' experience, North or South, who can give some of the leading iron men in the country as references, is open for an engagement. Address "Blast Furnace," care *The Iron Age*, New York.

STEEL WORKS SUPERINTENDENT and ENGINEER; sheets, plates, forgings, castings, special shapes, machinery, implement and tool steels, open hearth and crucible. Address "Steel Specialties," care *The Iron Age*, New York.

As SUPERINTENDENT of a steel casting plant by an up-to-date foundryman and mechanic, possessing good business and executive ability; experienced in handling men and planning work, and familiar with open hearth and crucible furnaces. Address "Superintendent," care *The Iron Age*, New York.

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By FURNACE BUILDER; steady employment; thoroughly competent and sober man; age 30; can furnish best of reference. Address D. D. Swavely, Box 83, Lebanon, Pa.

By a first-class ROLLER on iron or steel; 20 years' experience; best of reference. Address Oscar Harris, 201 Greenwich street, Reading, Pa.

As FOREMAN in iron foundry, by a practical molder, who has had ten years' experience as a foundry foreman in making light and heavy work; can furnish the best of references as to character and ability from those who have employed him. Address "Molder," care *The Iron Age*, New York.

Blast furnace FOREMAN desires to change, capable of handling repairs and improvements; three years' Southern experience; good reference. Address "J. F. O.," 1603 Penn avenue, Pittsburgh, Pa.

As FOUNDRY FOREMAN by a practical molder, who has had some experience as foreman; the advertiser is 30 years of age and can furnish good reference. Address "A. S. C.," care *The Iron Age*, New York.

DRAFTSMAN requires situation in general engineering works; four years shop, three years technical college and two years in drawing office. Address W. H. Godfrey, Oak Lane, Philadelphia, Pa.

LINOLEUM MANUFACTURER requires situation at once; latest methods of inlaying; machinist, and could superintend erection of plant. Address "Linoleum," care *The Iron Age*, New York.

BLAST FURNACE MANAGER; experienced in anthracite and coke; up in modern methods; six years in Virginia; also a chemist. Address "Manager," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

HARDWAREMAN; over six years' experience in retail general hardware store; 22 years of age; best of reference from present employers; advancement, reason for changing, position in wholesale or large retail store desired. Address "Advancement," care *The Iron Age*, New York.

FOREMAN MOLDER, American, 35, is open for position; capable; experienced; best of references; either light or heavy work. Address "S. T. E.," care *The Iron Age*, New York.

CHEMIST, a graduate of Lehigh University, Pennsylvania, wishes position as chemist with manufacturing house or firm. Address "Lehigh," care *The Iron Age*, New York.

Young man, number years' experience in machine shops, &c., desires situation; good manager of help. Address "M. W. C.," P. O. Box 1429, Boston, Mass.

IRON FOUNDRY FOREMAN of ability and energy, up to date in cost and production of castings of heavy and medium weight, is open to engagement; temperate habits. Address "Up to Date," office of *The Iron Age*, 805 Fisher Building, Chicago, Ill.

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RE-LAYING STEEL RAILS.

3,000 tons Prime Re-Laying Steel Rails, 56 lbs. per yard, with all the Angle Fish Plates to suit, for delivery in New York Harbor.

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life is not a happy one at the best, and if to his general misery is added bad coke, it is not worth living. Defective castings are often traced back to poor fuel, bought generally upon somebody's recommendation, who ought to know better.

We are coke manufacturers and can guarantee our own production.

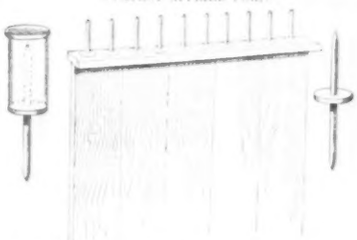
VINTON COLLIERY CO.,

Real Estate Trust Building,

PHILADELPHIA.

Rivet Nail and Driver.

(PATENT APPLIED FOR.)



Would like to hear from some hustling firm willing to place this nail on the market. A grand nail for fences and a substitute for barbed wire, and also for nails driven through boards and nailed on fences.

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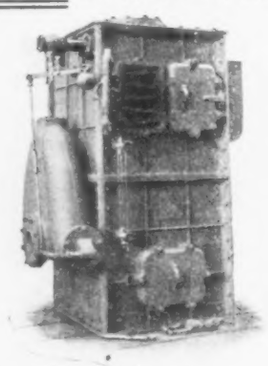
Pumping Through, Instead of From, A Feed-Water Heater.

Method No. 1: The Pump draws or receives the water intended for the boilers in its original condition; that is—cold, and with all its impurities. The pump then forces (against the pressure in the boiler, and against the friction) this water into the Heater: the pump does not stop pushing the water so long as it is in operation, and it also pushes along all the mud, organic matter, etc. The Heater ***is part of the pipe line*** to the boilers—the water must keep moving through it—and so must the mud. The carbonates of lime and magnesia become insoluble—that is, they are precipitated when the carbonic acid gas is ***driven off*** by the heat of exhaust steam, but there is little or no chance within a closed or pressure heater for these gases to free themselves, and so the carbonates in solution pass on through the heater into the boilers, where the gases can get away from the water the same as the steam does, and then precipitation and deposit occur.

Absolutely no purification obtainable with this type of heater except when the water comes to rest, which occurs only when the plant is shut down.

Method No. 2: The gases liberated by the heat of the exhaust are free to find their way to the atmosphere, for the ***"Cochrane" Heater*** is an "Open Heater," therefore the carbonates have a chance to form in flaky or solid particles, and it is only a question of providing a suitable lodging place for them, as well as for the mud—tray surface, settling chamber, and a filter bed in the ***Cochrane Heaters.***



The exhaust steam condensed in heating the water amounts to say 1-6th or 1-7th of the total supply. This is saved and used, being mixed with the other water. No scale forming matter whatever in this condensed steam.

The Heater in method No. 2 has to carry less than one pound of pressure—the Heater in case No. 1 must be built to carry boiler pressure, and, therefore, it is heir to all the ills of boilers—expansion and contraction strains, leaky joints, etc.

Is there any question as to which is the preferable system to adopt?

We have hundreds of thousands of horse power of ***Cochrane Heaters*** proving that method No. 1 cannot "hold a candle" to method No. 2, though this we would like to have you prove for yourself by installing one of our ***Cochrane Open Heaters.*** We send them on trial.

Harrison Safety Boiler Works,

MFRS. OF THE COCHRANE HEATERS AND THE COCHRANE SEPARATORS.

COL. STA., PHILADELPHIA, PA.

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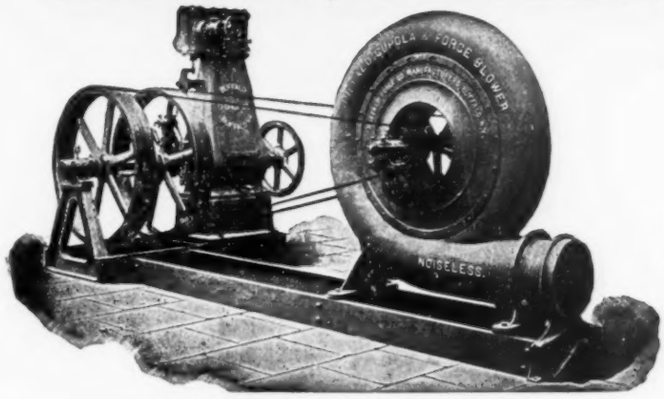

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By "Interested Correspondents" I mean persons who desire to further investigate seeming opportunities to better their present advertising ventures, and not merely idle clerks or office boys with nothing but curiosities to be satisfied—distinctly not such.

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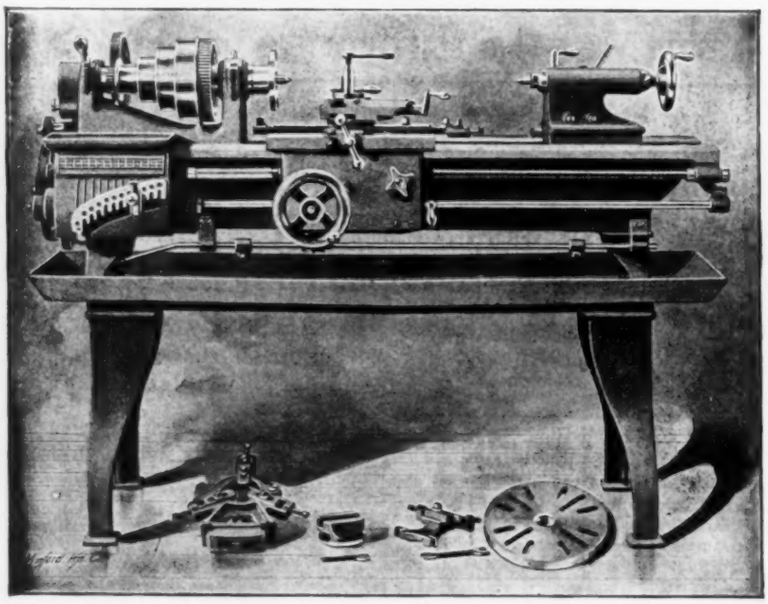

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We take this method of notifying the public that we have already commenced suit against infringers of these patents, and that should it be found necessary to the protection of our rights, additional suits will be brought against manufacturers, venders, and users of infringing lathes.

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Hollow Shafting,	Roller Bearings,	Bushings,
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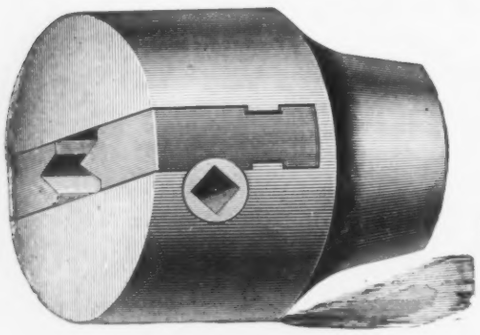

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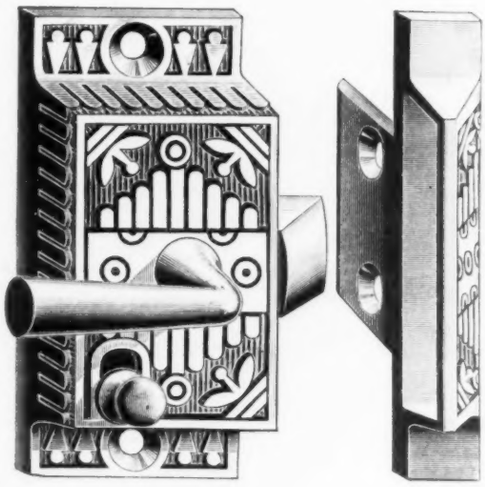

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for cleaning from Street and Railway curves, ice, snow and dirt. Handle 38 in. long with steel scraper end. Handle riveted to brush. Strongly made of extra heavy wire set in V shape.

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for Steam and Street Rail way track sweeping. Made of extra heavy flat steel wire.

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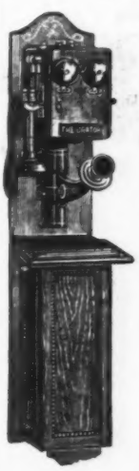

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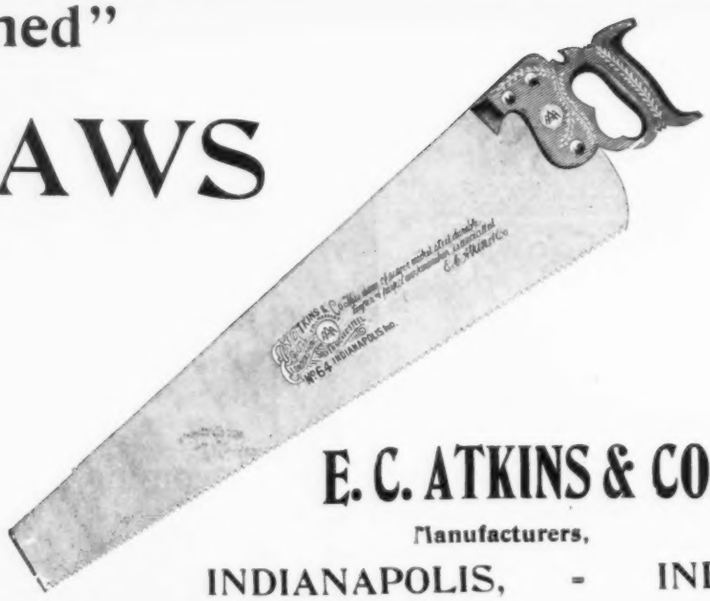

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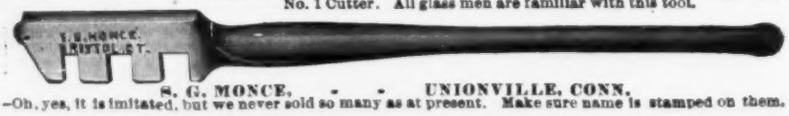

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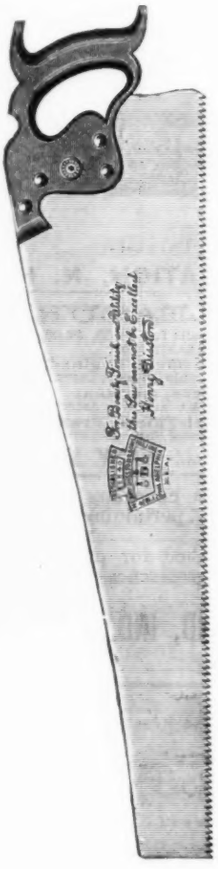

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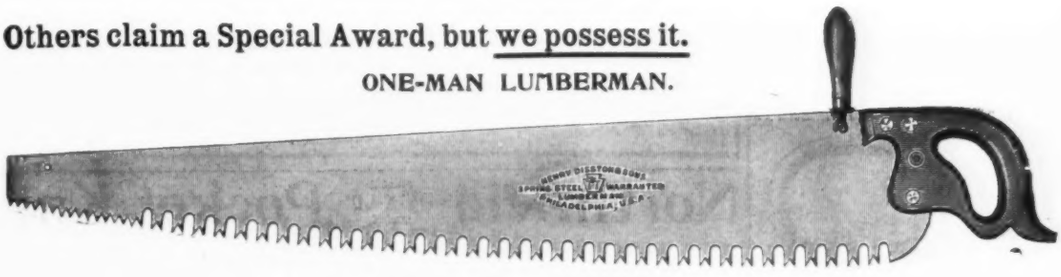

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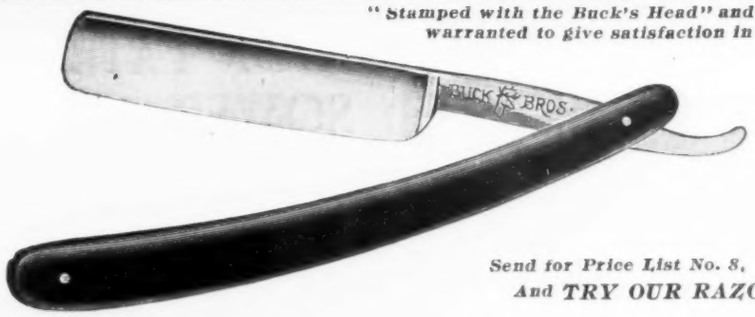

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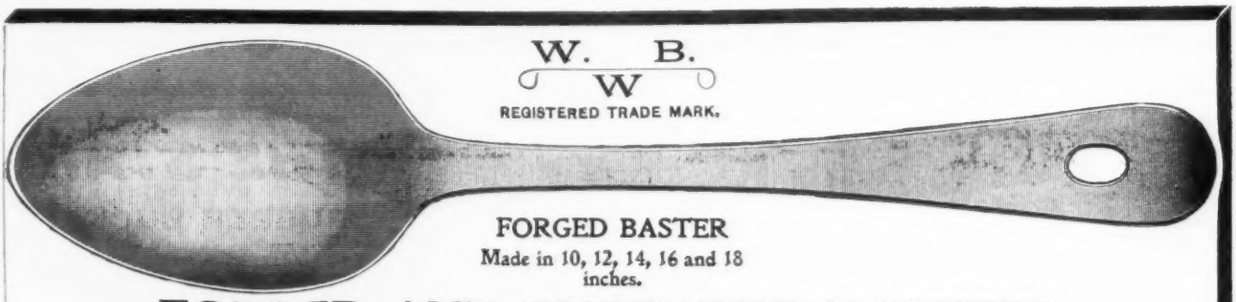

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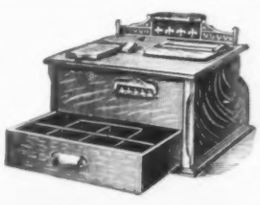

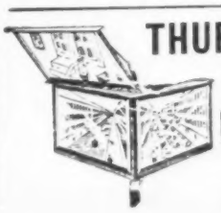

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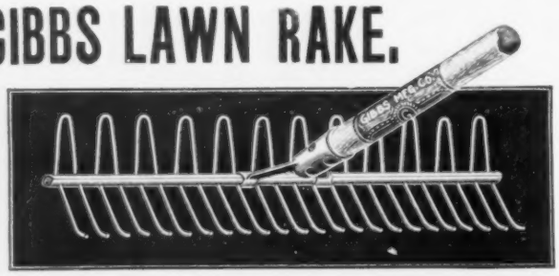

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By R. R. WILLIAMS, Hardware Editor of *The Iron Age*. 450 Pages. 500 Illustrations. Price, $3.00

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Counter Showcases.
Upright Showcases.
Ceiling Arrangement.
Sampling Goods.
Signs in the Store.
Pillars for Displaying Goods.
Scales.
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Nails.
Farm and Garden Tools.
Scythes.
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THIS volume has been compiled from the extended series of articles in *The Iron Age*, on the arrangement of Hardware Stores, and contains a large and varied mass of information in regard to store arrangement.

A chapter is devoted to each subject and all are fully illustrated.

The summary of contents will convey an idea of the wide scope of the work, which treats of almost every subject connected with the arrangement of Hardware Stores.

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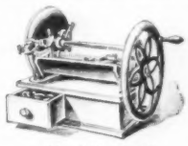

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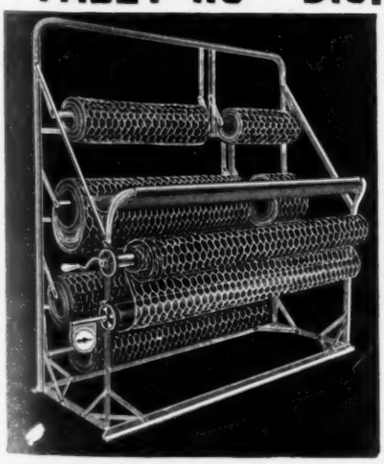

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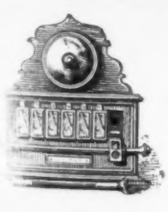

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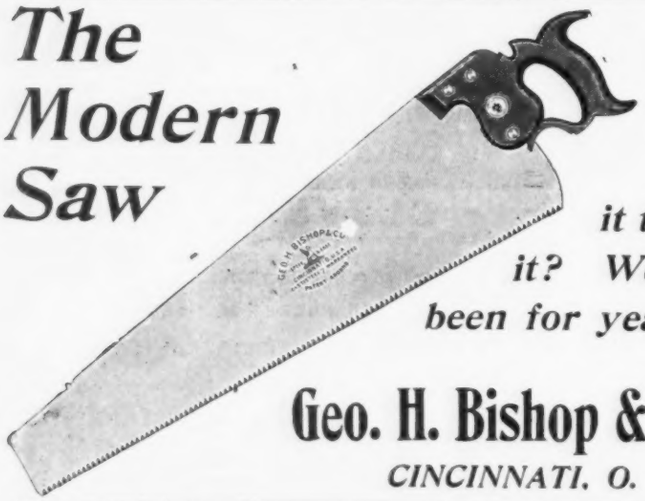

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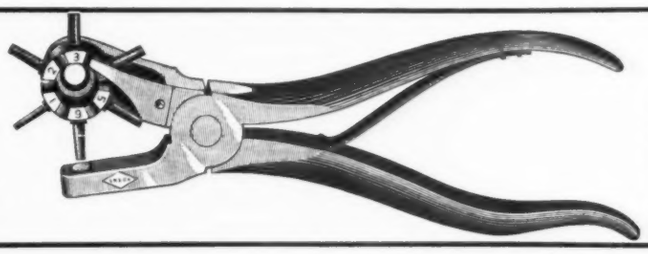

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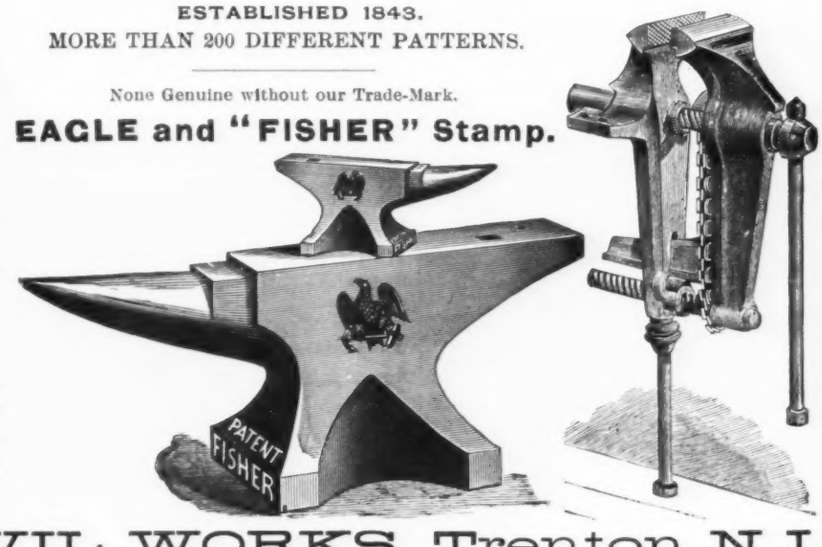

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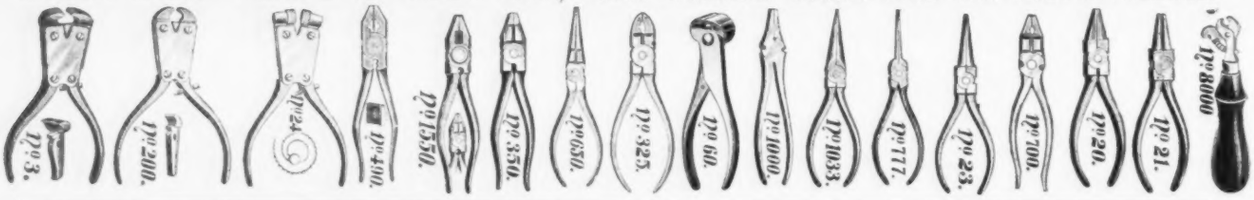

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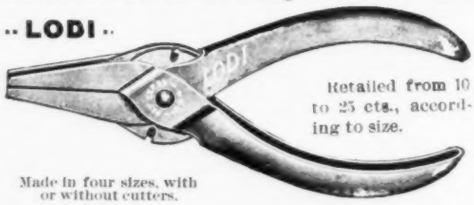

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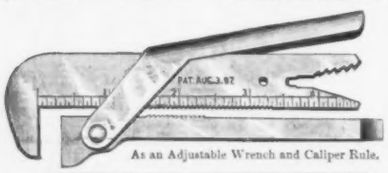

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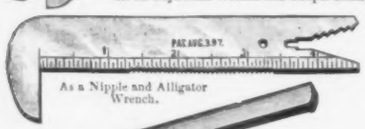

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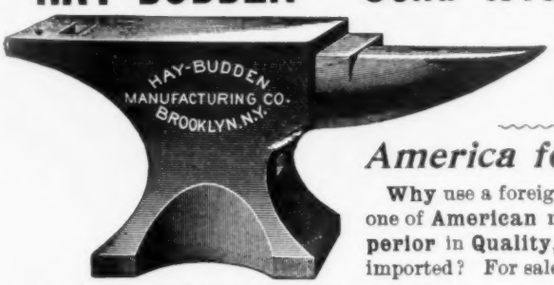

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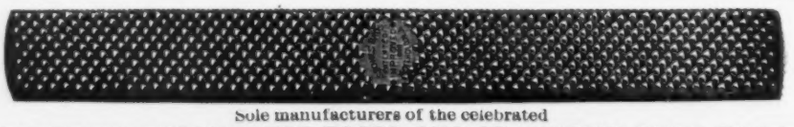

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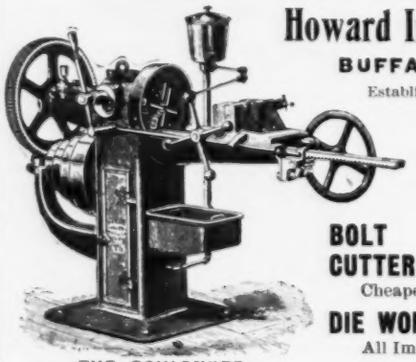

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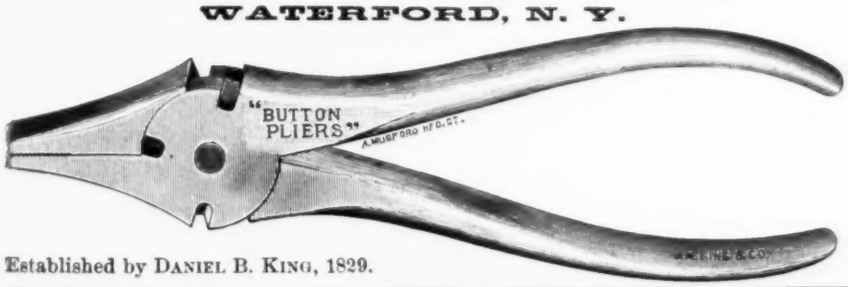

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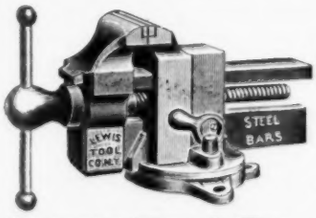

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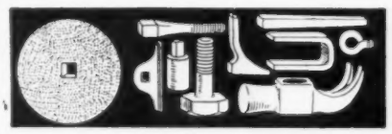

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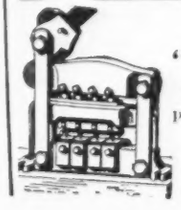

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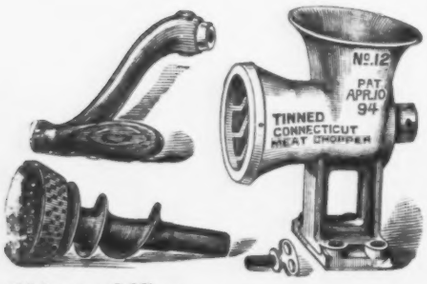

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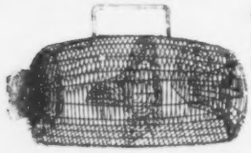

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NEW pattern Heavy Screw Clamps. Strongest in the market.

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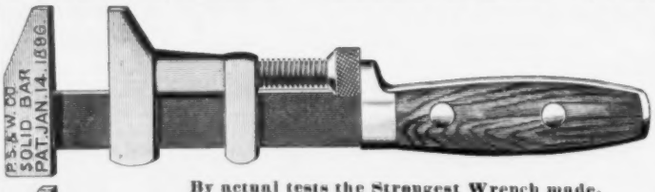
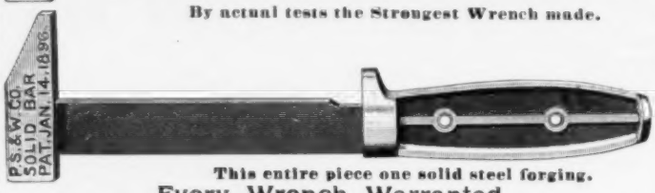


By actual tests the Strongest Wrench made.



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Every Wrench Warranted.

THE ONLY Screw Wrench made with the bar of ONE PIECE, thus securing greatest possible strength.

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Special Designs to order.

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The JEWEL COMB CASE is 8 inches long, 5 1-2 inches high, 3 1-4 inches wide.

Has strong corrugated ends, stamped front and back.

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that were put up 15 years ago are still working entirely satisfactorily. Since then they have been improved a great many times, and we now only repeat the language of our customers when we say: "We do not see how you can make any further improvements on the ladders, as they are perfect in every respect."

The ***Milbradt Rolling Step Ladders*** are made to order and to fit all kinds of shelving, in various styles to suit all purposes, and are especially adapted for Hardware Stores. Write for Catalogue.

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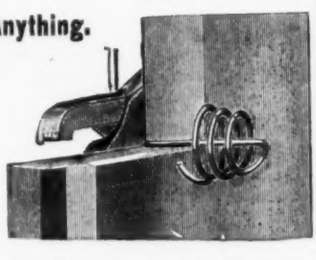
Holds Anything.



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Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for 15 years.

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THE BICYCLE STEP LADDER.

Especially adapted for Hardware Stores

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**

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Save stock and sample from dust, dirt and moisture.

No rust, no soiled stock.

Stock is never handled until sale is made.

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The finest fixture made and costs no more than the old style.

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Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request.
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We manufacture the "Michigan" Round and Square "Western Washers," and White Pine Washtubs. Our car load prices will interest you. Sold by Jobbers, or write the manufacturers.

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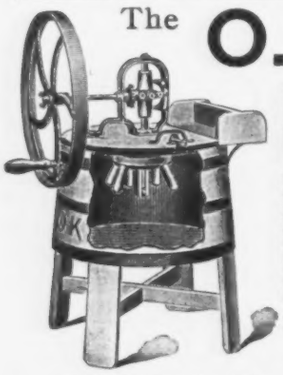
The O. K. Rotary Washer...



has **revolving steel ball gearing**, thus superior to others. Wheel continues one direction, the stirrer in both directions. Lid closes tight.

No escape of steam.

Worked by hand or belt.

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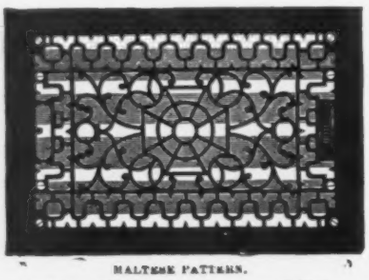

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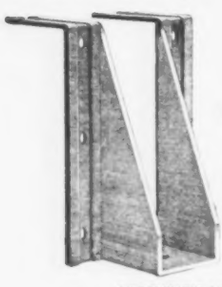

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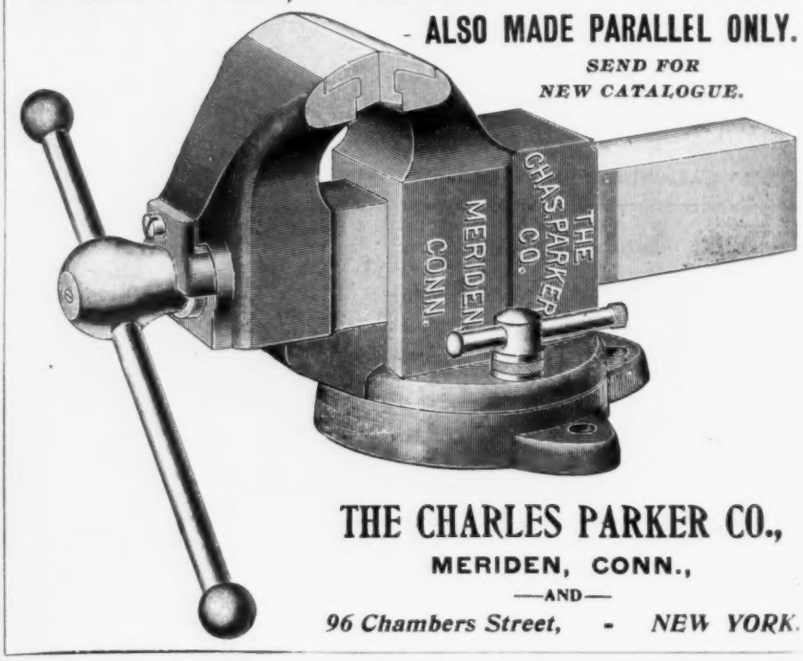

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SOMETHING NEW. EVERY HARDWARE DEALER SHOULD HANDLE.

Write AT ONCE for descriptive circulars, etc., to nearest agent.

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UNEQUALED IN EFFICIENCY,

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The St. Louis Washer

is a double acting machine, working with two cylinders in opposite directions at the same time, thus cleansing the clothes more thoroughly than could possibly be done on the old fashioned board or any other washing machine now on the market. It is so arranged that it is absolutely impossible to tear the clothes, and works so simply and easily that a child can work it without fatigue.

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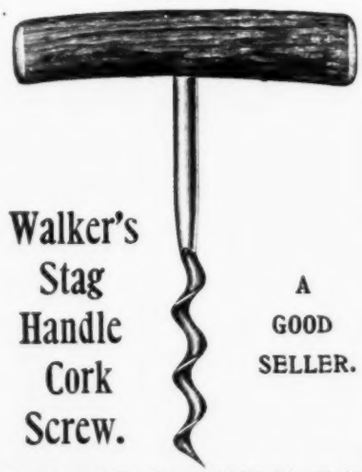

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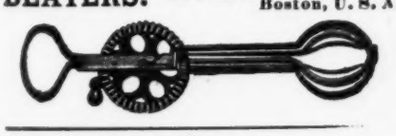

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The Yukon combines all the best points of the best makes with several new features, which makes it the best Refrigerator on the market.

The Yukon is made in two styles, with ***Removable Flues,*** and with the ***entire Ice Chamber Removable.***

We note some of the excellent features of the Yukon:

Thoroughly seasoned ash lumber.
Elegance of finish.
Carved panels.
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Solid bronze hardware, Roman gold finished.
Zinc lined. Patent casters.
Galvanized iron flues, ice rack and shelves.

The shelves being so constructed that small dishes placed upon them will not tip over.

Patent Trap, connected with waste pipe in bottom of provision chamber, where it is most accessible, both trap and waste pipe being easily removed cleaned and replaced, without a back-breaking process or poking with a stick.

The insulation used is ***Granite Rock Wool*** and Charcoal Sheathing.

Buy the Yukon and you will have the best Refrigerator made as well as an elegant piece of furniture.

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The America..

is the best refrigerator made, and has the following superior points:

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Order a sample to compare with the one you are now handling, and be your own judge, or send for catalogue. Our prices are right.

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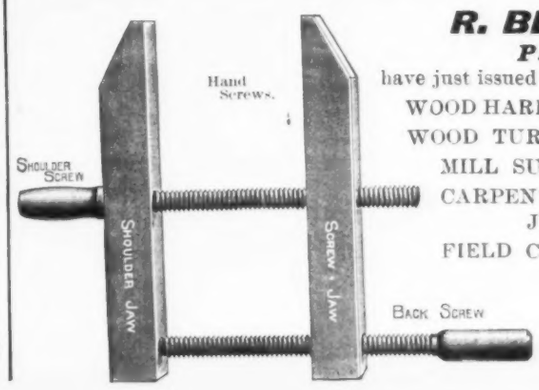

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Catalogue Free.

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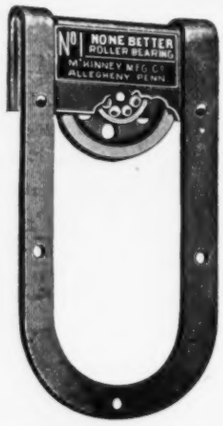

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TUBE WELL STRAINERS AND STEAM PUMPS

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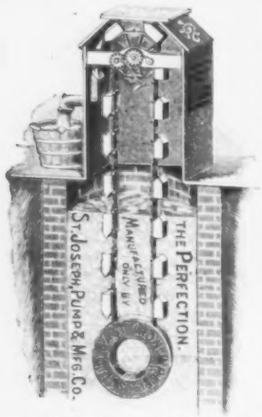
The "Perfection"



IT IS THE SIMPLEST STRUCTURE FOR RAISING WATER ON THE CONTINENT GUARANTEED NEVER TO FREEZE.

has so many points of merit, that we cannot attempt to enumerate them at this time. It is absolutely the only Elevator Pump that has chain or bucket manufactured of Black Open Hearth Steel, Galvanized after construction, and entirely free from soldering. Have received medals and diplomas wherever exhibited, the latest medal being received from the Trans-Mississippi Exposition held at Omaha.

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Estimates and advice furnished on *Steel Sub-Structure* work of all kinds.

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IS THE BEST FOR GENERAL USE.

WE MAKE

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ALSO

HAY TOOLS.

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Gate, Blind and Shutter Hinges, Gate Latches, Frame Pulleys, Casters, Shelf Brackets, Sash Lifts, Drawer Pulls, Hooks, Thumb Latches and other goods.

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WILL POLISH ANY OLD THING.

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FOR FREE SAMPLE, write

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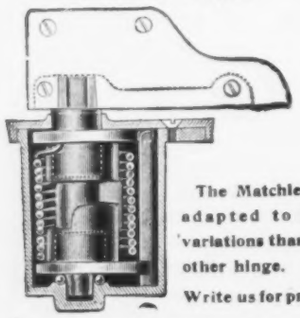
THE MATCHLESS
Double-Acting Floor Hinge.
BALL BEARING.



The Matchless is adapted to more variations than any other hinge.

Write us for prices.

LAWSON MANUFACTURING CO.,
MAIN OFFICE:
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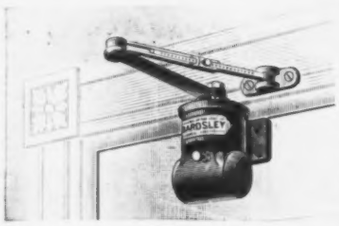
THE "BARDSLEY"
Oil Door Check and Spring



HAS new and improved features; is free from packing friction; the checking power can be released when the door is near the closing point; more oil can be added when needed without taking it from the door and it can be readily taken apart with the aid of a screw-driver when repairs are necessary.

Size A,	price each,	$3	50
" B,	" "	4	00
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LIBERAL DISCOUNTS TO THE TRADE

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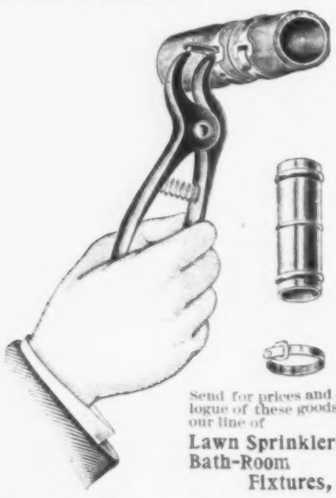
NEW CRESCENT
HOSE MENDER.

IT'S FLAT—Won't cut the hose; mender and bands are of brass; pliers of iron, handsomely Japanned. Simple, convenient. Screw menders tear the lining and wire bands cut. Our flat bands make secure couplings and positively will not injure the hose. Are rapid sellers.



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THE TOLER
Liquid Door Check and Spring.
PERFECTION ATTAINED AT LAST.

Entirely new in style and mechanism, **strong, simple and effective**, giving in results all the best achievements of other checks, together with new and valuable features only to be found in this.

It has a vertical case, with openings only at the top.

It has no plugs or caps screwed to the cylinder ends. It cannot leak. There is no way for the liquid to escape after the Check is applied.

The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material throughout.

It works to perfection, closing the door quickly and gently.

It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

Regular finish, Gold Bronze. No extra price for Silver Bronze or Dead Black when so ordered. Furnished Plated in Brass, Nickel, Copper or Silver, Plain or Oxidized, at a reasonable extra charge. No extra charge for Brackets where needed.

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Sash Weights, Valve Stop Boxes, Hydrant Boxes, Meter Boxes, Washers, Special Sizes Iron and Lead Weights to Order and all Kinds of Castings.

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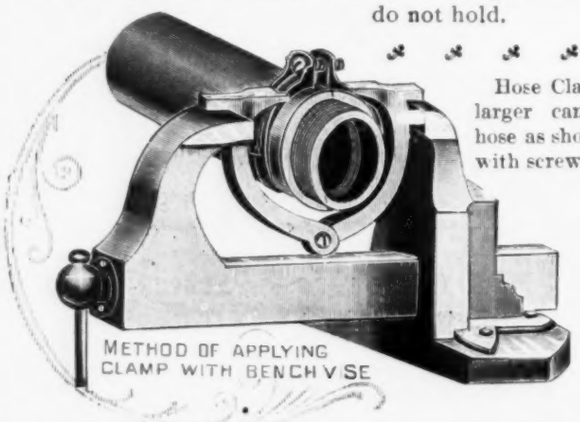
SEND FOR PRICE-LIST.

Stowell Mfg. & Fdy. Co.,
SOUTH MILWAUKEE, WIS
WM. H. LITTELL, Eastern Agent,
127 Duane St, New York.

A CURE FOR LEAKY HOSE

is for the dealer to order all hose coupled with *SHERMAN CLAMPS*, as that will remedy many leaks that come from wire bands that stretch or cast clamps that break and do not hold.

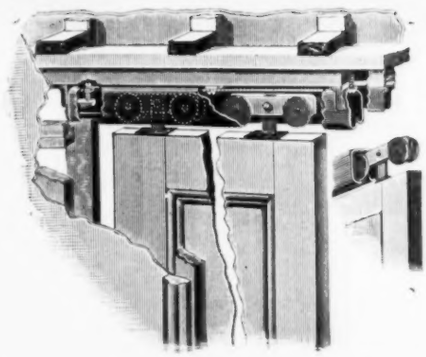


Hose Clamps 1 in. and larger can be put on hose as shown in cut, or with screw driver alone.

Small sizes ½ and ¾ in. for lawn hose are applied to hose with screw driver alone.

SOLD BY ALL JOBBERS.

Manufactured by H. B. SHERMAN MFG. CO., Battle Creek, Mich.



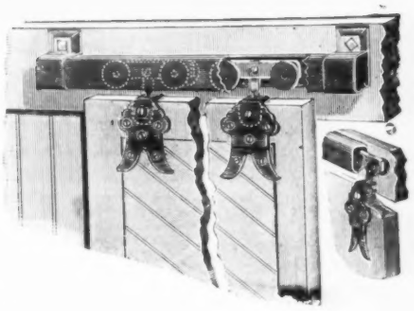
60,000

Sets of **COBURN** Hangers sold in 1898.

SEND FOR CATALOGUE.

Coburn Trolley Track Mfg. Co,

HOLYOKE, MASS.



UNITED STATES STEEL LOCK Co.

IOWA.

Sole makers of the

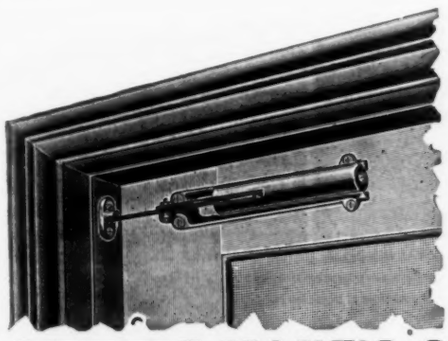
WARNER LOCKS

LOCKS.

Cold Rolled Steel,
Accurate in Construction,
Unsurpassed in Quality.

Hardware.

Artistic in Design,
Elegant in Finish,
Moderate in Price.



THE WARNER . . . SCREEN DOOR CHECK.

An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

GET OUR NEW CATALOGUE AND PRICES.

ARCADE MANF'G CO., Freeport. Ill., U. S. A.

TAPLIN'S PERFECTION WINDOW STOP ADJUSTER.

ORNAMENTAL
USEFUL
ECONOMICAL

Gives a FINE FINISH.
Prevents RATTLING or STICKING of Window Sashes.
Keeps out COLD and DUST.

A STAPLE ARTICLE

A Perfect Adjuster for Sliding Door Stops.

Finished in Solid Bronze, Oxidized Copper, Nickel and Gold Plate, or as ordered. Securely packed, with screws to match. To fasten in stops, simply bore ¼-inch hole and they will drive in just right. New Lists and Discounts.

PAT. July 13, 1897.

Send for Samples and Prices.

THE TAPLIN MANUFACTURING COMPANY, FORESTVILLE, CONN.,
Manufacturers of Hardware Specialties.
New York Agency, - - READING HARDWARE CO., 96 and 98 Reade Street, New York

WHEELING HINGE CO.,

Headquarters For

Wrought Hinges, Carriage Bolts, Wrought Goods, Stamped Fire Shovels, Milk Jar Tops, Beer Bottle Trimmings. We solicit orders for

SPECIALTIES

Made of Steel, Zinc, Tin or Brass, Stamped or Forged.

WHEELING, W. VA.

The Walda Sectional Window Weight

Square and Round weights.
Hang exactly from centre.
Only 10 inch pockets required.
Eliminates use of lead weights.

The Hardware Dealer

with one-sixth the stock required in one-piece weights can fill any order. Weights crated with 100 lbs. in a box, both plainly marked.

The Contractor

saves time, money and delay by balancing windows exactly at once.

SEND FOR CIRCULAR.

Barney & Reed M'f'g Co.,

85 Water Street, - BOSTON, MASS.

JOHN LOYD.

Machine Knives, Shear Blades Presses and Dies.

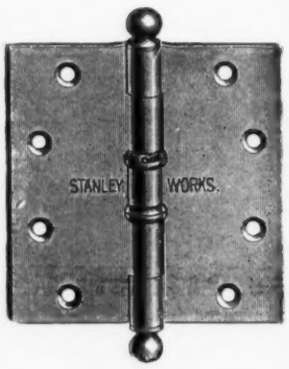
Nos. 558 to 562 Water Street, New York.

The washer used in

Stanley's Ball Bearing Steel Butts

(Cut of Washer, Full Size.)

is filled with balls turned from solid steel. Each ***ball*** will sustain a weight of 1,000 lbs. without crushing. The washer is so constructed that it will not come apart in using.



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THE STANLEY WORKS, Dept. F, NEW BRITAIN, CONN.
79 CHAMBERS ST., N. Y.

Celebrated STAR BRAND

JACK CHAINS,
SAFETY, PLUMBERS' and LADDER CHAINS,
ESCUTCHEON PINS.

Now made by

The Turner & Seymour Mfg. Co.,

TORRINGTON, CONN.

Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware and Fancy Metal Goods.

The Lawrence Steel Strap Hinge.

THE LATEST, NEATEST, STRONGEST. The altogether BEST ON THE MARKET. Made from the finest grade of Hinge Steel, cut with the grain, full width at the pintle, gives this hinge three times the strength of the common strap hinge.

WRITE FOR CIRCULARS AND PRICES.

LAWRENCE BROS., STERLING, ILL.

Manufacturers of Steel Door Hangers, Hinges, Pulleys, and other Hardware Specialties.

Galvanized Awning Slide Rods.

Galvanized by Improved Process, insuring Perfect Finish.
Now is the time to buy before prices go still higher.

....WRITE FOR PRICES....

Manufactured by **Garland Chain Co., Rankin Station, Pa., U.S.A.**

Eastern Sales Agents:
HENDRICKS & CLASS,
150 Nassau St., New York, U. S. A.

AUTOMATIC SCREEN DOOR CATCH.

These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. Counted counter sample furnished with first order of 2 dozen catches. Ask your jobbers for them. If they don't keep them, write us.

THE AUTOMATIC DOOR CATCH CO.,
135-137 Lake St., Chicago, Ill.

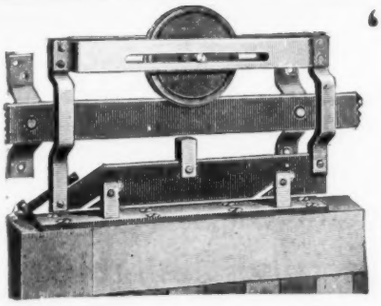
JOBBERS TAKE NOTICE!

The **PRICES** of almost all of our steel products are

UNCHANGED AS YET.

ONEIDA COMMUNITY, (Ltd.)

KENWOOD, N. Y. NIAGARA FALLS, N. Y.



"Lane's Standard"

Is the Original Steel Single Rail **Parlor Door Hanger**

The most popular Hanger to-day, because it is **ALL** steel and substantially and well built on correct mechanical principles.

It Gives Satisfaction.

Manufactured by Lane Brothers Co., Poughkeepsie, N. Y.

THE
READING STANDARD
BLOCK (Patented).

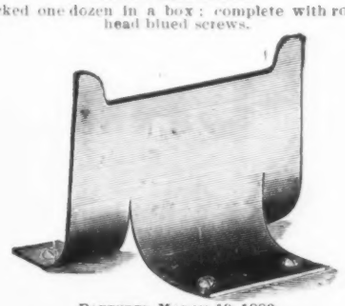
This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
READING, PA.

STEEL FOOT SCRAPER.
Black Enameled

Packed one dozen in a box; complete with round head blued screws.



PATENTED MARCH 19, 1889.

CAN'T BE BENT OR BROKEN.

Made from one piece best Bessemer Steel. Edge dressed smooth so that it will remove mud or ice without cutting the shoe. Neat, cheap and affording the dealer a good profit. No broken ones to replace as with cast iron scrapers. Every scraper gives lasting satisfaction. SOLD BY ALL JOBBERS. Made by

WM. E. PRATT MFG. CO, Chicago,

Manufacturers of all styles of Hog Rings, Netting Staples, Calf Weaners, Wire Mats, Husking Pins, Etc.

HALT!

HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys.

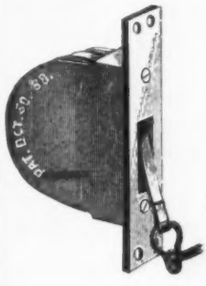
MANUFACTURED BY
THOMAS MORTON.
65 Elizabeth Street,
NEW YORK.

SILVER LAKE SASH CORD
Has been the standard for thirty years.

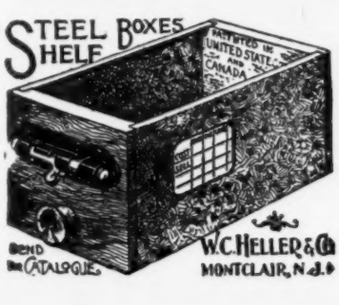
Every Hank Bears the Above Label.
SEND FOR SAMPLE.

SASH WEIGHTS.

E. E. BROWN & CO.,
McKean and Meadow Sts.,
PHILADELPHIA, - - PA.



10 YEARS
Caldwell Sash Balance.
It stands the test of time.
Caldwell Mfg. Co.,
Rochester, N. Y.



"A NOISELESS DOOR CLOSER."
The
"NORTON"

DOOR-CHECK
...and...
SPRING CO., Sears Building, Boston, Mass.
SEND FOR CIRCULAR.

PORTER SCREEN MANUFACTURING CO.,
Manufacturers of
Door and Window Screens,
CATALOGUE FREE. Burlington, Vt.

McCABE
Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
SEND FOR CATALOGUE.
McCabe Hanger Mfg. Co.,
533-543 West 22d St., New York.

"PIONEER" FIFTY POINT CARBON STEEL TUBING

The uniformity obtained from our process of manufacture is especially desirable for bicycle purposes.

We invite our customers to come in on our floor and select their tube—test specimens from the general run, and to take any piece they choose to select as a sample of excellence.

NO SPECIALLY PREPARED SAMPLES.

THE
POPE TUBE CO.,
HARTFORD, CONN.

"Pioneers" in Correct Composition.

We should be pleased to quote you discounts on application. Send for printed matter.

Metal Head Floor Scrapers
or Squilgees.

The head is made of malleable iron and steel securely bolted together, with extra heavy rubber of good quality.

List and discounts on application.

The Osborn Manuf'g Co.,
BRUSHES— Cleveland, O.
FDY. SUPPLIES.

Manufacturers of BELLS of all Descriptions
ALSO BICYCLE SPECIALTIES.

SIGNAL GONG.

BEVIN BROS. MFG. CO., East Hampton, Conn.

Established in 1838.

STEEL FOR PRESSED, STAMPED, DRAWN AND PLATED WORK.

ESTABLISHED 1877. INCORPORATED 1884

The WILMOT & HOBBS Mfg. Co.

MANUFACTURERS & EXPORTERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER
& OPEN HEARTH, HOT ROLLED, ANNEALED & PICKLED, ALSO
BRIGHT COLD ROLLED "SWEDOH" STEEL.
UNEXCELLED FOR PRESSED, STAMPED,
DRAWN & PLATED WORK.

WILMOT'S PATENT "CLINCHER" CYCLE TUBING
STRONGER THAN THE SEAMLESS.

WE MAKE A SPECIALTY OF
WILMOT'S PATENT SPRING STEEL BEDSTEAD TUBING
OF SUPERIOR FINISH, LIGHTNESS & STRENGTH.

ENGINEERS', & STEAMBOAT SETS, "COPPERIZED" ALSO NICKEL, BRASS-PLATED & JAPANNED.

BRANCH OFFICE:
POSTAL TELEGRAPH BLDG., NEW YORK.

MAIN OFFICES & WORKS:
BRIDGEPORT, CONN., U.S.A.

COLD ROLLED STRIP STEEL.

Patent "Clincher" Fifty Carbon "Swedoh" Spring Steel Cycle Tubing.

GLIDDEN'S METALLIC REPAIR OUTFIT

The one that has the Hinged Plugs.

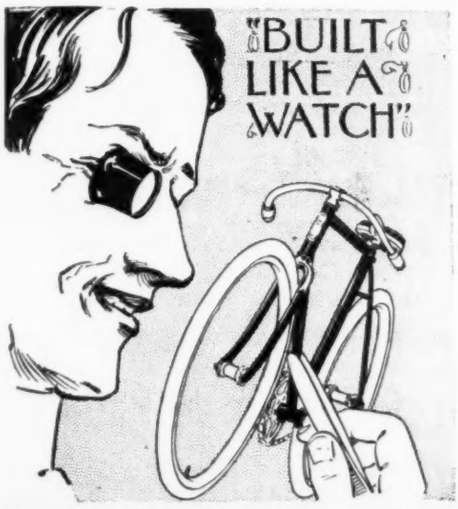
THIS is the smallest, neatest, most compact and practical repair outfit ever offered to the public. Complete in a tin box 1½ inches long, 1 inch wide and ¼ inch thick. It will repair a puncture at once, without the use of cement, and any woman or child can use it. The plug is made of metal with a **hinged head, which can be forced into a much smaller opening than one with a stationary head.** Two sizes of plugs are furnished with each kit, which will fit ordinary punctures; also a cutter is furnished, to be used when the puncture is too small to admit the plug.

Directions for use. Place the flat plate of the plug so it will be loose on the key. Screw the key into the plug and insert into the hole, leaving the flat plate on the outside of tire. Draw back the key so that the plug will rest flat on the inside of the tire. Screw the flat plate to plug with wrench (left hand thread), and turn key to right. Remove the key by turning to left, and you have a permanent repair which does not injure the tire or its looks.

DISCOUNT TO THE TRADE. ASK YOUR JOBBER FOR IT.

——*Sole Selling Agents,*——

DAME, STODDARD & KENDALL, 370, 372 & 374 Washington St., Boston, Mass.



The Sterling...

"BUILT LIKE A WATCH."

CHAIN MODELS, . . $50.00
CHAINLESS MODELS, $75.00
TANDEMS, ... $75.00

Flush Joints. Mannesmann Tubing. Large Sprockets.
The Agency for 1899 will be a valuable adjunct for the energetic dealer in hardware or kindred trades.

Sterling Cycle Works, *KENOSHA, WIS.*

Don't Buy Any Bells

TILL YOU HAVE SEEN OURS.

Our bells have Adjustable Levers.
" " " Adjustable Push Buttons.
" " " Artistic Designs.

Send for our New Catalogue.

The BRISTOL BELL CO.,
BRISTOL, CONN., U. S. A.

STERLING BELLS.

One best, the STERLING.

Bells of all Descriptions. Send for Catalogue.
N.N.HILL BRASS CO , East Hampton, Conn.

BERGER'S GUTTER HANGERS

The very best made. Strong and easy to put up and adjust. By proper selection of the shank the requirements for any style eave will be met. The new **Royal Circle** is quite an improvement on the old. Other kinds of Hangers, Pipe Hooks and Fasteners, Gutter and Pipe, and a general line of

Tinners' Hardware and Roofers' Supplies.

BERGER BROS. CO., - - PHILADELPHIA.

—A COMPLETE LINE OF—

BICYCLE BELLS.

Made from Pure Bell Metal.

Send for Catalogue and Price List.

STARR BROS. BELL CO.,
Easthampton, Conn., U.S.A.

ESTABLISHED 1840.

Patent "Clincher" Fifty Carbon "Swedon" Spring Steel Cycle Tubing."

Hardware Dealers

can make a greater profit on the sale of

ONE :: ::

MONARCH BICYCLE

than on a Carload of Nails.

Price and quality unapproachable.

Monarch Roadsters, = $50.00
Defiance Roadsters, = $35.00
Our King and Queen Bicycles,
The greatest pair of wheels on earth for **$25.00**
Monarch Chainless, = $75.00

Every model embodies 1899 features throughout.

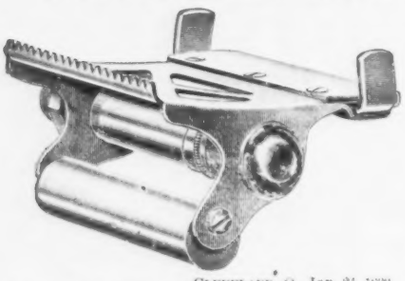
AGENTS WANTED in every City, Town and Hamlet.

"Ride a Monarch and keep in front."

MONARCH CYCLE MFG. CO., Lake, Halstead and Fulton Streets, CHICAGO.

Branches: NEW YORK, LONDON, HAMBURG.

SELF BALANCING ADJUSTABLE PEDAL.



CLEVELAND, O., Jan. 24, 1899.
REED & CURTIS MACHINE SCREW CO.,
Worcester, Mass.
GENTLEMEN:
We are sending you by express to-day parts of the Reed & Curtis pedal, which we find are of no value to us, as we find it unnecessary to carry any extra supply of Parts for the Reed & Curtis Self-Balancing pedal.
Respectfully,
THE McINTOSH-HUNTINGTON CO.

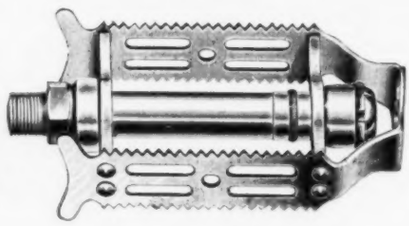
WE GUARANTEE OUR PEDALS.

SEND FOR CATALOGUE.

ALSO

OIL EXTRACTORS, MACHINE, SET AND CAP SCREWS.

Curtis No. 10 Rat Trap PEDAL.



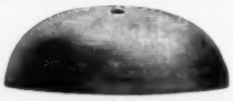
Reed & Curtis Machine Screw Co.,
WORCESTER, MASS

FEDERAL
ROD CUTTER
Has many good points.
Send for Circular.
Cuts ¼ in. to 0 in.
CHANDLER & FARQUHAR,
BOSTON, U. S. A.

GEM NAIL CLIPPER.
Cleans.
Cuts.
Files.

It is a neat, well made, nickel plated article. Put up attractively and sold cheaply. Send for circulars and prices.
H. C. COOK & CO., Ansonia, Conn., U. S. A.

GEO. JOHNSON,
ESTABLISHED 1877
Manufacturer of
CATASAUQUA, PA.



UNMOUNTED.
STEEL GONG BELLS
—AND—
BRIGHT COLD ROLLED STRIP STEEL FOR ALL PURPOSES.

ICE TONGS, HAY AND BOX HOOKS,
AND THE CELEBRATED
EUREKA and GIANT BICYCLE WRENCHES.
MANUFACTURED BY
ITHACA DROP FORGE CO., Ithaca, N. Y.
DROP FORGINGS OUR SPECIALTY.

U.M.C.
TRADE MARK.

Factory Loaded Paper Shells

Smokeless and Trap Shells,
With Nitro Powders.
Acme Shells,
With *dense* Nitro Powders.
New Club Shells,
With Black Powder.
ALL GAUGES, ANY WADDING, ANY COMBINATION OF LOADS.
SPECIAL LOADS IF DESIRED.

UNION METALLIC CARTRIDGE CO., · Bridgeport, Conn.
SEND FOR LATEST PRICE LIST.

SEND FOR CATALOGUE.
FOREHAND GUNS ARE STANDARD.

NEW PERFECTION AUTOMATIC SMALL PISTOL.
32 cal.—5 shot—made with shorter barrel for bicycles.
THE MOST PERFECT SMALL ARM MADE.
FOREHAND ARMS CO.,
WORCESTER, MASS.

MILLETT'S PATENT **CORE OVEN**
No one who makes small cores can afford to be without it. . .
DOUBLE DOORS,
One closing the oven when the other is open.
Saves Fuel, Saves Time.
SEND FOR CIRCULAR.
MILLETT CORE OVEN CO., Brightwood, Mass.
The ovens can be seen in the sample rooms of the S. Obermayer Co., either in Cincinnati or Chicago, and in the show rooms of J. W. Paxson & Co., Philadelphia.

Start Right—begin the new year by getting correct prices on
PETERS CARTRIDGES,
LOADED SHELLS, PRIMERS AND GUN WADS.

The rifle experts of the world have carefully tested, then adopted, and won with them. Ask for Price List, Circulars and the '99 Calendar.
THE PETERS CARTRIDGE CO., - - Cincinnati, O.
Eastern Branch, 80 Chambers St., New York.

BICYCLE SUNDRIES
AT LOWEST PRICES.

MANUFACTURERS' AGENTS FOR
B & R Acetylene Lamps.
Middletown Bells.
Standard Wrenches.
The cheapest and best goods in the world.
Write for Complete Catalogues.
SCHOVERLING, DALY & GALES
325 Broadway, New York.

IF YOU SHOOT A RIFLE, *Pistol* or *Shotgun*, you'll make a Bull's Eye by sending three 2c. stamps for the *Ideal Hand-book* "D," 128 pages, FREE. The latest Encyclopedia of *Arms, Powders, Shot and Bullets.* Mention *Iron Age.*
Address IDEAL MFG. CO., NEW HAVEN, CONN., U. S. A.

HIGH CLASS
DROP FORGINGS.
STRIEBY & FOOTE CO.,
NEWARK, N. J.

ESTABLISHED 1872.
Woodman's Speed Indicators,
For ascertaining correct speed of Dynamos, Steam Engines, Shafting, Floor Machines, etc. Supplied with Rubber Tips, Split Caps and Plain Caps, etc.
Prices as Low as the Lowest and Workmanship as Good as the Best, and Better.
Send for our Prices and Discounts.
R. WOODMAN MFG. & SUPPLY CO.,
Boston, Mass., U. S. A.

Established in 1866.
The Belden Machine Co.
New Haven, Conn.
ENLARGED AND IMPROVED FACILITIES.
DROP FORGINGS
IN ALL ITS BRANCHES.
Iron, Steel, Copper and Aluminum.
Specifications for estimates on your 1899 requirements solicited.
Prompt, Efficient and Satisfactory Work.

H. & R. AUTOMATIC
DOUBLE ACTION SHELL EJECTING.

Send for Catalogue
SEE OUR COMPLETE LINE.
HARRINGTON & RICHARDSON ARMS CO.,
Park Ave. and Chandler St., WORCESTER, MASS.

KANT KRACK MICA CHIMNEYS
and CANOPIES, for incandescent gas lights, etc.
Send for catalogue and prices of a large line of Mica specialties.
NO. CAROLINA MICA CO.,
BOSTON and CHICAGO, U. S. A.

1899

We are ready for you
BURDICK CYCLOMETER,
Accurate and trusty.
EVERLIT LAMP,
None better at any price.
BELLS, with royal tone.

If you burn gas,
"THE MAJESTIC"
is *the* lamp.
It is made all right,
And gives big light.

Send for "Bicycle" Catalogue.

MILLER
LAMPS
FOR ALL PURPOSES.

Send for
Hardware Catalogue.

EDWARD MILLER & CO.,
MERIDEN, CONN., U. S. A.

A CARD.

We shall occupy this space for the next 52 issues of *The Iron Age* to tell the Hardware dealers about the

Ingersoll Watches

and now to begin: They are furnished in four grades, from $1.00 to $1.75 Retail, and from $9.00 to $14.40 Doz. Wholesale. Hardware trade in 1898 sold over 200,000 of them. Better let us send you samples.

ROBT. H. INGERSOLL & BRO.,
67 Cortlandt St., N. Y.

THE ▲ KING ▲ REPEATING ▲ AIR ▲ RIFLE

A full line carried in San Francisco.

The only perfect repeating Air Rifle in the world.
Shoots 150 times without reloading.

Metal parts made entirely of steel, highly polished. Black walnut stock. For sale by jobbers everywhere. Manufactured by

THE MARKHAM AIR RIFLE CO., Plymouth, Mich.

Mossberg Tire Bells.

When you see and hear this bell you will want it. Every Hard ware dealer should have them in stock. Handled by all jobbers.

No. 1, Chime.
No. 2, Single Gong.

By mail, No. 1 for 75 cents, No. 2 for 50 cents.

Manufactured by Frank Mossberg Co., 625 Atwells Ave., PROVIDENCE, R. I.

COE MANUFACTURING CO., 50 Warren St., New York, Sole selling Agents for U. S. A.

The
LIGHTNING
BEST
CHEAP
CHURN
MADE.

Send for Catalogue.

Agents Wanted.

PORTER BLANCHARD'S SONS CO.
Nashua, N. H., U. S. A.

FORGINGS
Carriage, Bicycle and Special.

Correspondence Solicited.

E. D. CLAPP MFG. CO.
AUBURN, N. Y.

ACTUAL SIZE.

Price, **$1.00.** 10,000 miles and repeat. *Dust-proof, water-proof, positive action.* Parts cannot become disarranged. Cannot register falsely unless actually *broken.* No springs. No delicate parts.

DO THIS!!!

Put some

Veeder

Cyclometers in stock. They are as useful as a watch. One measures distance, the other time—both are essential factors of every business or pleasure trip. To every cyclist the Veeder Cyclometer is a necessity.

Made for 24, 26, 28 and 30 in. wheels.

Its merit has eliminated competition —90% of modern cyclometers are Veeder Cyclometers.

Booklets Free.

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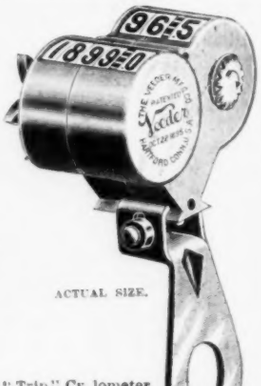

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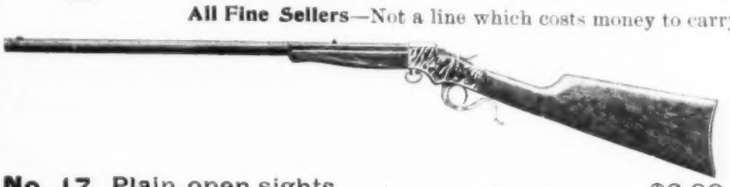

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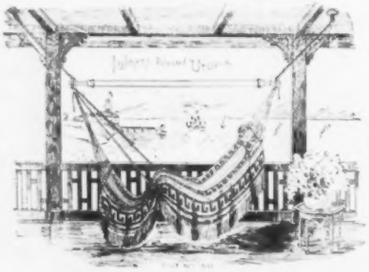

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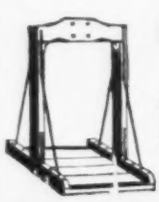

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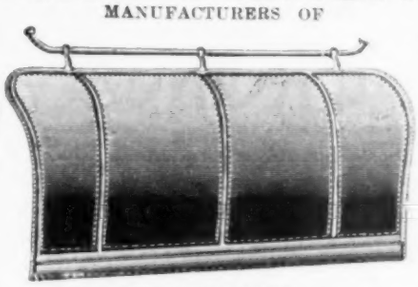

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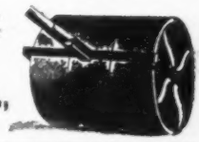

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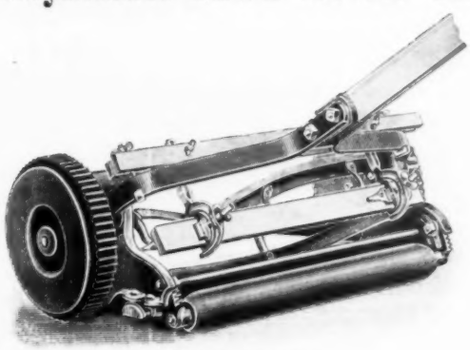

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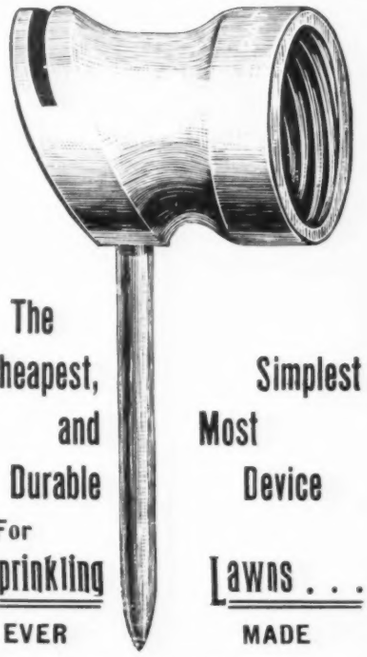

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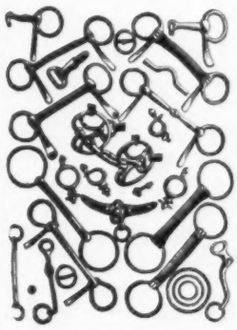

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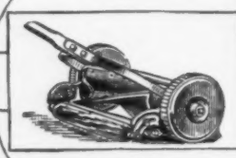

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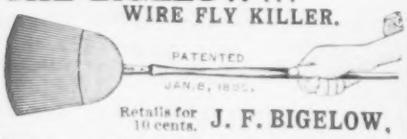

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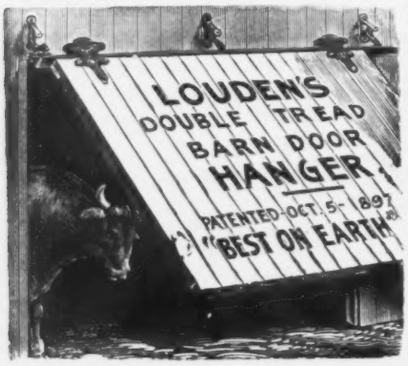

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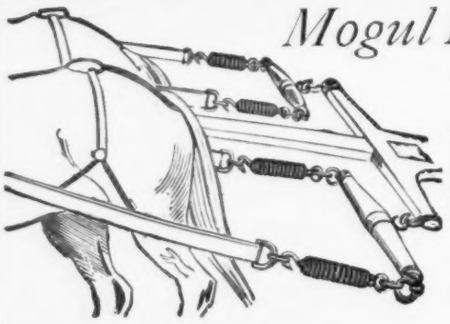

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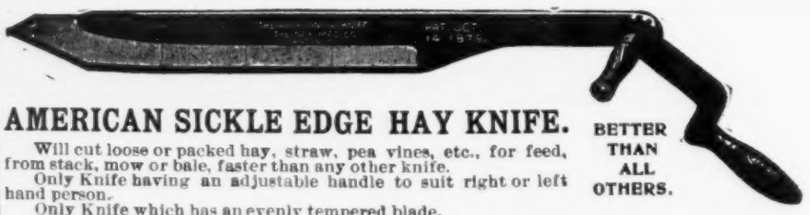

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Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Northfield Knife Co., Northfield, Conn.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.
Veeder Mfg. Co., Hartford, Conn.

Dampers.
Williams, A. C., Ravenna, O.

Dashes and Fenders.
McKinnon Dash Co., Buffalo, N. Y.

Decorated Tin Goods.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Hey-Budden Mfg Co., Brooklyn N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg. Co., Cleveland, O.

Display Racks, Poultry Netting
Burton, Matthew, Batavia, Ill.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Bardsley, Jos., 147-151 Baxter St., N. Y.
Norton Door Check & Spring Co., Boston.
Pullman Cash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale Mch. Co., Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Grant Machine Tool Works Cleveland, O
Langelier Mfg. Co., Providence, R. I.
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Stover Novelty Works, Freeport, Ill.
Weis Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
York, S. M. Co., Cleveland, O.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clap, E. O. Mfg Co., Auburn N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
Kilborn & Bishop Co., New Haven, Conn
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Striebу & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Rowe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn
Stiles, E. S. Press Co., Watertown, N. Y.
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J., Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I
Stiles & Parker Press Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Philadelphia Pa.
White, L. & L. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass
Taplin Mfg. Co., Forestville, Conn.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamont, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass
New Castle Engineering Works, Pittsburgh, Pa.
Riter-Conley Mfg Co., Pittsburg, Pa.
Sague, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Metz, Aug., 128-138 Mott St., N. Y.
Palmer, Bros. Mianus, Conn.
Thompson, J. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Westinghouse Machine Co., Pittsburgh, Pa.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tol, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street N. Y.
Seaman, D. C. & Co., Philadelphia, Pa.
Steward & Romaine Mfg. Co., Phila., Pa.

Experimental Work.
International Electric Co., 70 Beekman St., N. Y.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn

Feuce Posts.
Kokomo Fence Mch. Co., Kokomo, Ind.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Bolles, J. E. Iron & Wire Works, Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
Detroit Fence Co., Detroit, Mich.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg Co., Chicago Ill.
Kokomo Fence Machine Co., Kokomo, Ind.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.
Union Fence Co., De Kalb, Ill.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Mc[illegible], E[illegible] & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co. Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Floor Scrapers.
Osborn Mfg. Co., Cleveland, O.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Foot Warmers.
Chicago Foot Warmer Co., Chicago, Ill.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hey-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fruit Jar Trimmings.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, R. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M. Toland Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Grass Hooks.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

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Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compressed Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Landis Tool Co., Waynesboro Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Grindstone Hangers.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Hack Saw Blades.
Millers Falls Co., 93 Reade S.., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Palmer, I. E., Middletown, Conn

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Cass. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.
Stanley Works, New Britain, Conn.
Suppiee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Sickels & Nutting Co., 35 Barclay St., N.Y
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Carriers.
Milwaukee Hay Tool Co., Milwaukee, Wis.

Hay Knives.
Clark & Parsons Co., S. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Milwaukee Hay Tool Co., Milwaukee, Wis.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hoists, Air.
Pedrick & Ayer Co., Philadelphia, Pa.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich

Hose Couplings, Air.
Pedrick & Ayer Co., Philadelphia, Pa.

Hose Menders.
Crescent Brass & Iron Co., Detroit, Mich
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Cream Dishes.
Clad, V. & Sons, Phila., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 51 Spruce St., N. Y.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lilienberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron. *Manufacturers.*
Whitney, A. R. & Co., 29 B'way N. Y.
Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O.

Job Lots, Hardware.
Browne & Mansfield, 245 Broadway, N.Y.
Chicago House Wrecking Co., Chicago, Ill.

Joist Hanger.
Von Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Keys, Machine.
Morton Mfg. Co., Muskegon Heights, Mich.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Grant Machine Tool Works, Cleveland, O
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Windsor Machine Co., Windsor, Vt.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Mowers.
Lawson Mfg. Co., Milwaukee, Wis.
Ney Mfg. Co., Canton, Ohio
Phila Lawn Mower Co., Phila., Pa.

Lawn Mower Sharpeners.
Wilcox Mfg. Co., Aurora, Ill.

Lawn Rakes.
Graham, John H. & Co., 113 Chambers St., N. Y.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Fan Lawn Sprinkler Co., San Francisco, Ill.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Reading Hdw. Co., Reading, Pa.
U. S Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Machine Tool Co., Worcester, Mass
Farrel Foundry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Pouiterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Thomas & Howe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Knives.
Loyd, John, 558-562 Water St., N. Y.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago Ill.
Hubbell, Harvey, Bridgeport, Conn.
Miles, F. S., Phila., Pa.
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester
Rhode Island Tool Co., Providence, R. I
Worcester Mch. Screw Co., Worcester

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools – *See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y
Lowisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Machines.
Adams Co., Dubuque, Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Grant Machine Tool Works, Cleveland, O
Lucas & Gilpin, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mill Supplies.
Bliss, R. Mfg. Co., Pawtucket, R. I.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & Klag Perforating Co., Chicago, Ill
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Petroleum.
Daimler Mfg. Co., Long Island City, N. Y.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Nail Clippers.
Cook, H. C. & Co., Ansonia, Conn.

Nail Machinery.
Atherton, Jesse Auburn, R. I.
Crescent Mfg. Co., Beverly, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Fisherville, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester

Oil Heaters.—*See Oil Stoves.*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

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Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.
Johns, H. W. Mfg. Co., 100 William St., N. Y.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paper.
Niagara Paper Mills, Lockport, N. Y.

Patent Solicitors.
Donaldson, W. & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Pattern Letters.
St. Louis Electrotype Foundry, St. Louis.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Petroleum Burners.
U. S. Fuel Oil Equipment Co., Philadelphia, Pa.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Haik & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Sayler, W. F. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. & Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Stanley Rule & Level Co., N.Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore, Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Niles Tool Works, Hamilton, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scholihorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Pocket Knives.
Northfield Knife Co., Northfield, Conn.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Post Hole Diggers.
Iwan Bros., Streator, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland,
Wright & Colton Wire Cloth Co., Worcester, Mass.

Poultry Netting Display Rack.
Burton Seat Bow, Batavia, Ill.

Power Hack Saws.
Stover Novelty Works, Freeport, Ill.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, E. E., Worcester, Mass.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati O

Power Transmitting Mach'nery.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Phila. Mch. Tool Co., Philadelphia, Pa.
Stiles, E. S. Press Co., Watertown, N. Y.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.

Pulley Lathts.
Woods, T. B. Sons, Chambersburg, Pa.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
Red Jacket Mfg. Co., Davenport, Ia.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.

Punches, Conductors.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Frasse & Co., 19 Warren St., N. Y.
Hilles & Jones Co., Wilmington, Del.
Mersick, C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg Co., Fond du Lac, Wis
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y
Jones & Laughlins, Ltd. Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper
Thompson, Hugh C., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Phila. Roll & Mch. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, Ohio.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Shield.
Ironsides Co., Columbus, Ohio.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.
Woods, T. B. Sons, Chambersburg, Pa.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.
Ward, Edgar T. & Sons, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Millar, C. & Son, Utica, N. Y.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Lansingburgh, N. Y.
Grand Rapids Sash Pulley Co., Grand Rapids, Mich.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
American Cutlery Co., Chicago, Ill.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Osborne, D. M. & Co. Auburn, N. Y.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.
Sawyer Tool Co., Fitchburg, Mass.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screw Plates.
Fairbanks Co., 311 Broadway, N. Y.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co. Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures
Standard Stamping & Die Co., Brooklyn, N. Y.

Shaft Couplings.
Fairbanks Co., 311 Broadway, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Seliers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City N. J.

Spark Guards.
Estey Wire Works Co., 65 Fulton, N. Y.

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Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N.Y

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.
Hartley & Graham, 313-315 B'way, N. Y

Sprayers.
Eureka Co., Rock Falls, Ill.

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Dunbar Bros., Bristol, Conn.
Lord Bros Mfg Co., Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N Y
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich
Hatheway Mfg. Co., Bridgeport, Conn.
Houghton & Buxton Mfg. Co., Worcester Mass
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.

Steam Traps.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 29 Broadway, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Manufacturers' Agents.

O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
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Dickenman & Davis, 85-87 John St., N. Y.

Steel Rails.
Edna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
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Sellers, Wm. & Co., Phila., Pa.

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Patch, F. R. Mfg. Co., Rutland, Vt.

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Ostrander Fire Brick Co., Troy, N. Y.

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Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

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Excelsior Needle Co., Torrington, Conn.

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Rogers, Wm. Mfg. Co., Hartford, Conn.
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Grand Crossing Tack Co., Grand Crossing, Ill.
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Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind.

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Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

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Ideal Machine Works, Hartford, Conn.

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Proudman Bros., Meriden, Conn.
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Wiley & Russell Mfg. Co., Greenfield,

Telephones.
Rawson Electric Co., Elyria, Ohio.

Terne Plate.
American Tin Plate Co., Chicago, Ill.

Thuroscopes.
Bayer & Co., Phila., Pa.

Time Recorders.
Heywood Bros. & Wakefield, Gardner, Mass.

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Philadelphia Roll & Mch. Co., Phila., Pa.
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Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo.

Tin Plate.
American Tin Plate Co., Chicago, Ill.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore

Tire Repair Outfits.
Dame, Stoddard & Kendall, Boston, Mass

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Burke, P. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

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Am. Tool Chest Co., 200 W. Houston St.,
Bliss, R. Mfg. Co., Pawtucket, R. I.

Tools.
Athol Machine Co., Athol, Mass.
Besly, C. H. & Co., Chicago, Ill.
Brown, R. H. & Co., New Haven, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls, Millers Falls Co., 93 Reade, N. Y.
Smoothorn, Wm. Co., New Haven, Conn
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
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Butts & Ordway Co., Boston, Mass.
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Wiley & Russell Mfg., Co., Greenfield Mass

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Schneider & Trenkamp Co., Cleveland, O.

Tote Boxes.
Clark, W. J. & Co., Salem, O.

Trouser Guards.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Trowels.
Bishop, Geo. H. & Co., Cincinnati, O.
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Trucks.
Boston & Lockport Block Co., Lockport,
Kilbourne & Jacobs Mfg. Co., Columbus,
Syracuse Chilled Plow Co., Syracuse, N.Y

Tub Hoops.
Weaver, Palmer & Richmond, Rochester, N. Y.

Tube Bending Machines.
Bridgeport Tubing Co., Bridgeport, Conn

Tube Cutters.
Groves & Haines, Philadelph'a, Pa.

Tubes, Seamless Drawn Copper, Brass and Bronze.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phœnix Tube Co., Brooklyn, N. Y.

Tubing, Steel.
Leng's, John S. Son & Co., 4 Fletcher St.
National Tube Wks. Co., McKeesport, Pa.
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Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills.
Cleveland Twist Drill Co., Cleveland,
Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.

Upholsterers' Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Turner & Seymour Mfg. Co., Torrington.

Valves, Gas, Water and Steam.
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
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Jenkins Bros., 71 John, N. Y.
Kennedy Valve Mfg. Co., 75 John St., N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
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American Blower Co., Detroit, Mich.
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Ventilator Appliances.
Howard & Morse, 45 Fulton St., N. Y.

Ventilators.
Enterprise Foundry Co., Cincinnati, O.

Vises.
Athol Machine Co., Athol, Mass.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Lewis Tool Co., 44 Barclay St., N. Y.
Massey Vise Co., Chicago, Ill.
Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks.
Anderson Pole & Shaft Co., Anderson, Ind.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Lane Bros. Co., Poughkeepsie, N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn

Washers.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
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Washing Machines.
Brammer, H. F. Mfg. Co., Davenport, Ia.
Cyclone Washing Mch. Co., Battle Creek, Mich.
Michigan Washing Mch. Co., Muskegon, Mich.
Wayne, Anthony Mfg. Co., Ft. Wayne Ind.

Watches.
Ingersoll, Robt. H. & Bro., 67 Cortlandt St.

Water Gates.
Kennedy Valve Mfg. Co., 75 John St., N. Y.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weaners.
Carroll Muzzle Co., Carroll, Iowa.

Well Auger.
Iwan Bros., Streator Ill.

Well Supplies.
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows.
American Steel Scraper Co., Sidney, O.
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Stanley Works, New Britain, Conn.

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Taplin Mfg. Co., Forestville, Ct.

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Barney & Reed Mfg Co., Boston, Mass.

Wire.
Dillon-Griswold Wire Co., Sterling, Ill.
Kidd Bros. & Bargher Steel Wire Co., McKee's Rock, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
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Estey Wire Works Co., 65 Fulton, N. Y.
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Howard & Morse, 45 Fulton, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
Chandler & Farquhar, Boston, Mass.
King, J. M. & Co., Watertown, N. Y.
Scholthorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.

Wire Drawing Machinery.
Bates Machine Co., Joliet, Ill.
Morgan Construction Co., Worcester.
Mossberg & Granville Mfg. Co., Providence, R. I.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods.
Brooks, M. S. & Sons, Chester, Conn.
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Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hendee Wire Brush Co., Milwaukee, Wis.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

Wire Forming Machinery.
American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
Bates Machine Co., Joliet, Ill.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.
Shuster, F. B. Co., New Haven, Conn.

Wire Mill Machinery.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Wire Nails.
American Steel & Wire Co., Chicago, Ill.
Chicago House Wrecking Co., Chicago Ill.
Dillon-Griswold Wire Co., Sterling, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Pittsburgh Wire Co., Pittsburgh, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton,
Whitney, A. R. & Co., 29 Broadway, N.Y.

Wire Nail Machinery.
Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

Wire Parts.
Jenkinson, R. C. & Co., Newark, N. J.

Wire Rods, Steel.
American Steel & Wire Co., Chicago, Ill.
Pittsburgh Wire Co., Pittsburgh, Pa.
Washburn & Moen Mfg. Co., Worcester,
Whitney, A. R. & Co., 29 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel.
Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
Shuster, F. B. Co., New Haven, Conn.

Wood Hardware.
Bliss, R. Mfg. Co., Pawtucket, R. I.

Wood Screw Machinery.
Cook, Asa S. & Co., Hartford, Ct.

Wood Working Machinery
Defiance Machine Works, Defiance, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches.
Bemis & Call Hdw. & Tool Co., Springfield, Mass.
Bonney Vise & Tool Co., Phila., Pa.
Coes Wrench Co., Worcester, Mass.
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Star Mfg. Co., Carpentersville, Ill.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.

Zinc Nails.
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Bolles, J. E., Iron & Wire Works 9
Bommer Bros. 128
Bonney Vise & Tool Co 95
Booth, The Lloyd Co. 25
Borgfeldt, Geo. & Co. 82
Borgner, Cyrus 27
Boston Belting Co. 40
Boston Bridge Works 18
Boston Gear Works 34
Boston & Lockport Block Co. 46
Botjer, C. 71
Bowen Mfg. Co. 99
Bradford Mill Co. 53
Bradlee & Co. 21
Bradley Co. 53
Braeburn Steel Co. 21
Brammer, H. F. Mfg. Co. 98
Brass Goods Mfg. Co. 2
Bridgeport Brass Co. 2
Bridgeport Chain Co. 84
Bridgeport Deoxidized Bronze & Metal Co 2
Bridgeport Gun Implement Co. 111
Bridgeport Mfg. Co. 83
Bridgeport Tubing Co. 52
Briggs, Marvin 67
Brinkerhoff, N. M. 97
Bristol Co. 1
Bristol Bell Co 107
Broderick & Bascom Rope Co 7
Brooks, M. S. & Sons 7
Brown & Co., Inc. 77
Brown, F. E. & Co. 105
Brown Hoisting & Conveying Mch. Co. 40
Brown, R. H. & Co. 78
Brown & Sharpe Mfg. Co. 65
Browne & Mansfield 71
Buck Bros. 83
Buck, Chas. 83
Buffalo Forge Co. ..... 75 & 128
Builders Iron Foundry 46
Bullard Mch. Tool Co 63
Burden Iron Co 113
Burdict, O. C. 49
Burditt & Williams 96
Burke, P. F. 114
Burnham, Geo. Co 53
Burr Mfg. Co. 43
Burton, Watth-w 89
Butterfield & Co. 50
Butts & Ordway Co 95
Byram & Co. 31

C

Cahall Sales Dept. ..... 1&76
Caldwell Mfg. Co 105
Cambridge Iron & Steel Co. 17
Canfield, H. O. 37
Capewell Horse Nail Co. 1
Carborundum Co. 46
Card, S. W. Mfg. Co. 51
Carlin's Sons, Thomas 67
Carroll Muzzle Co. 118
Cary Mfg. Co. 77
Cattaraugus Cutlery Co. 83
Chambers Bros. Co. 11
Champion Blower & Forge Co. 54
Chandler & Farquhar 108
Chapman Valve Mfg. Co. 34
Charter Gas Engine Co. 34
Chatillon, John & Sons 79
Cheney S. & Son 27
Chester Steel Casting Co 24
Chicago Flexible Shaft Co 84
Chicago Foot Warmer Co 86
Chicago House Wrecking Co. 97
Chicago, Milwaukee & St. Paul Ry. 70
Chicago Screw Co. 16
Chicago Spring Butt Co. 105
Chisholm & Moore Mfg. Co. 128
Christen, F. & Sons 37
Chrome Steel Works 24
Church, Isaac 16
Cincinnati Corrugating Co ..... 11&126
Cincinnati Milling Mch. Co. 57
Cincinnati Railway Supply Co. 6
Cincinnati Shaper Co 55
Cl'ad, Valentine & Son 83
Clapp, E. D. Mfg. Co. 110
Clark, John W. 3
Clark & Cowles 7
Clark & Parsons Co. 127
Clark, W. J. & Co. 39
Clay, Oliver P. Co 75
Clayton Air Compressor Works 37
Cleveland City Forge & Iron Co. 1
Cleveland Elevator Bucket Co. 39
Cleveland Rule & Handle Co 78
Cleveland Stamping & Tool Co 75
Cleveland Stone Co. 95
Cleveland Twist Drill Co. 48
Clinton Wire Cloth Co. 12
Clough, R. M. 51
Clough Rockwell 87
Cobb & Drew 11
Coburn Trolley Track Mfg. Co. 103
Coes Wrench Co 92
Compress Wheel Co. 45
Conn. Valley Mfg. Co 79
Consolidated Fruit Jar Co. 115
Cook, A. D. 100
Cook, H. C. & Co. 108
Cook, Asa S. & Co. 58
Cornell, J. B. & J. M. 38
Cotton, Barclay W. & Co. 25
Covert Mfg. Co. 117
Covert's Saddlery Works 77
Cox, Justice, Jr. 20
Cramp, Wm. & Sons S. & E. B. Co. 3
Crane, W. M. Co. 27
Crescent Brass & Iron Co. 102
Crescent Mfg. Co. 11
Crescent Steel Co. 23
Cresson, Geo. V. Co. 32
Crosby Steam Gage & Valve Co. 34
Crossley Mfg. Co. 44
Cunliffe, R. M 66
Curtis & Curtis 52
Cushman Chuck Co 47
Cutter, Wood & Stevens 44
Cyclone Washing Machine Co. 98

D

Daimler Mfg. Co. 35
Dallett, Thos. H. & Co. 42
Damascus Steel Co 20
Dame, Stoddard & Kendall 107
D'Amour & Littledale Asn. Co. 54
Dana & Co 73
Darby, Edw. & Sons 12
Dart, E. M. Mfg. Co 35
Davis, W. P. Machine Co. 59
Davol, John & Sons 2
Defiance Mach. Wks 50
Deming Co. 101
Dempsey Mfg. Co. 97
Denman & Davis 22
Detrick & Harvey Machine Co. 53
Detroit Fence 9
Diamond Machine Co. 46
Dickinson, T. L. 44
Dienelt & Eisenhardt 56
Dillon-Griswold Wire Co 9
Disston, Henry & Son 81
Dixon, Jos., Crucible Co. 39
Doan, J. B. & Co. 66
Dodge Mfg. Co. 40
Donaldson, Walter & Co. 7
Draper Machine Tool Co. 63
Dudgeon, Richard 50
Duff Patents Co. 29
Dunbar Bros. 6
Dunham Nut Co. 16
Dupont Mfg. Co. 60
Durant, W. N. 56
Dwiggins Wire Fence Co 9
Dwight Slate Mch. Co 52

E

Eagle Anvil Works 91
Eastern Forge Co 26
Eastern Machinery Co 40
Eastwood Wire Mfg. Co. 128
Eccles, Richard 114
Eckstein, C. G. 41
Eddy Electric Mfg. Co. 33
Elsen Mfg Co. 100
Egyptian Lacquer Mfg. Co. 86
Ellis & Halfenbarger 9
Empire Forge Co. 86
Energy Mfg. Co. 112
Ensign, Bickford & Co 113
Ensworth, L. L. & Son 75
Enterprise Fdry. Co. 102
Enterprise Mfg. Co. of Pa. 89
Erie Specialty Co. 99
Erikson, Edw. E 29
Estey Wire Works Co. 9
Etting, Edw. J. 25
Eureka Co. 115
Evans Friction Cone Co. 43
Excelsior Needle Co. 128
Export Iron & Steel Co 77
Eynon-Evans Mfg. Co. 35

F

Fairbanks Co. 43
Fairmount Machine Co. 41
Fan Lawn Sprinkler Co. 115
Farrel Foundry & Mch. Co 31
Fearing, Wm. S. 2
Ferro Carbon Casting Co. 32
Filer & Stowell Co. 35
Finished Steel Co 21
Fish, H. C. Machine Works 55
Fitch, W. & E. T. Co., The 127
Flagg, Stanley G. & Co. 128
Flint & Walling 101
Florence Machine Co. 68
Folding Paper Box Co. 82
Ford Bit Co. 83
Forehand Arms Co. 109
Forest City Foundry & Mfg. Co. 113
Frankford Steel Co. 28
Frank-Kneeland Mach. Co. 25
Franklin, H. H. Mfg. Co. 75
Frasse Co. 95
Freshour, H. C. 86
Frick, H. C. Coke Co. 30
Fulton Iron & Engine Works 41

G

Gardner, Jas. & Son 27
Garland Chain Co. 104
Garrison, A., Foundry Co. 25
Garvin Machine Co. 54
General Electric Co. 33
Geometric Drill Co. 47
Gerlach, Peter & Co. 40
Gilbert & Bennett Mfg. Co. 12
Gleason Tool Co. 128
Goodell Co. 84
Goodell Bros. Co. 84
Gould & Eberhardt 55
Goulds Mfg. Co. 101
Graham, John H. & Co. 88
Grand Crossing Tack Co. 13
Grand Rapids Brass Co. 17
Grand Rapids Sash Pulley Co. 110
Grant, Robt. & Co. 71
Grant Machine Tool Works 56
Green, A. H. 97
Green Ridge Iron Works 13
Greif Bros Co. 11
Griswold Wire Co. 11
Groves & Haines 17

H

Haines Gauge Co 32
Halk & Naumann 2
Hammer & Co. 96
Harrington, E., Son & Co. 57
Harrington & King Perforating Co. 5
Harrington & Richardson Arms Co. 109
Harrison Safety Boiler Wks. 74
Hart & Cooley Mfg. Co 20
Hartford Steam Boiler Insp. and Ins. Co. 36
Hartley & Graham 1
Harvey, Arthur C. Co. 24
Haskell, Wm. H. Mfg. Co. 18
Hatheway Mfg. Co. 77
Hav, Budden Mfg. Co. 90
Hazard Mfg. Co. 7
Heinisch's, R. Sons 8
Heller & Bros. 9
Heller, W. C. & Co. 10
Hendee Wire Brush Co. 7
Henderson Bros. 2
Hendey Machine Co. 7
Hendricks Bros. 8
Henry, J. T. Mfg. Co 8
Hendryx, A. B. Co. 8
Heywood Bros. & Wakefield 3
Hiertz, T. & Son 8
Highton, Wm. & Sons 9
Hill, Henry F. 9
Hill, N. N. Brass Co. 1
Hill, Clarke & Co. 8
Hill Dryer Co. 1
Hilles & Jones Co. 8
Hillman, J. H. & Co 8
Hilner, H. A. Sons 8
Hobson, Seaman & Co 8
Hoffman, Geo. W. 1
Hoffman, J. W. & Co. 8

Hodgson & Pettis Mfg. Co. 47
Holland Linseed Oil Co. 27
Hollands Mfg. Co. 93
Holmes, John E. & Co. 71
Horton Chuck Co 47
Hough Cash Recorder Co. 87
Houghton & Buxton Mfg Co. 75
Houston, C. B. & Co. 20
Howard & Morse 7
Howard Iron Works 94
Howson & Howson 7
Hoyt Metal Co. 4
Hubbell, Harvey 11
Humphryes Mfg. Co. 101
Hungerford, U. T. Brass & Copper Co. 3
Hunt, C. W. Co. 39
Huribut Rogers Mach. Co. 49
Hussey, C. G. & Co. 3

I

Ideal Machine Works 47
Ideal Mfg. Co. 109
Illinois Zinc Co. 3
Imperial Bit & Snap Co. 115
Ingersoll, Robt. H. & Bro. 110
Ingersoll-Sergeant Drill Co. 37
Iowa Farming Tool Co. 117
Ironsides Co. 40
Isaac Joseph Iron Co. 71
Ithaca Drop Forge Co. 108
Ives, H. B. & Co. 126
Iwan Bros. 115

J

Jackson Flue Scraper Co. 34
Jacobus, W. H. 116
Jamson Iron Co. 71
Jarecki Mfg. Co. 26&52
Jeffrey Mfg. Co. 40
Jenckes, E. Mfg. Co 10
Jenkins Bros. 1
Jenkinson, R. C. & Co. 6
Jenner, H. W. T. 7
Jennings, C. E. Co. 82
Jennings, Russell Mfg. Co. 83
Jessop, Wm. & Sons 22
Johns, H. W. Mfg. Co. 32
Johnson, Geo. 108
Johnson, I. H., Jr., & Co. 55
Johnson, Iver, Arms & Cycle Wks. 127
Johnson, Wm. C. & Sons, Mch. Co. 67
Jones, B. M. & Co. 20
Jones, L. M. Co. 112
Jones, Jesse, Paper Box Co. 97
Jones & Lamson Machine Co. 76
Jones & Laughlins, Ltd. 30

K

Keeley, Jerome & Co. 20
Keen & Hagerty Mfg. Co. 96
Kennedy, Julian 29
Kennedy Valve Mfg Co. 35
Keystone Drop Forge Co. 114
Kidd Bros. & Burgher Steel Wire Co. 13
Kidder, R. E. 50
Kilborn & Bishop Co. 75
Kilbourne & Jacobs Mfg. Co. 116
Kilmer Wire Mfg. Co. 9
Kimball Bros. & Sprague 11
King, J. M. & Co 95
Kinnear Calk Co. 117
Kokomo Fence Machine Co. 9
Konigslow, E. & Bro. 75
Krap D. H. 75
Kupferle Jno. C. 75

L

La Belle Steel Co. 23
Ladd, W. C. 82
Lamond, David 29
Lane Brothers Co. 105
Langelier Mfg Co. 55
Laughlin, Alex. & Co. 29
Lawrence Bros. 104
Lawson Mfg. Co. 102
Lea, J. Tatnall & Co. 20
Leonard, Wm. G. 94
Leng's, Jno. S., Son & Co. 128
Leonard Mfg. Co. 86
Leonhardt & Co. 111
Lesher, A. & Sons Rope Co. 7
Lewis, Henry & Co. 25
Lewisohn Bros. 3
Lewis Tool Co. 95
Ligerwood Mfg. Co. 128
Lilienberg, N. 24
Link-Belt Engineering Co. 43
Livermore, Homer F. 27
Lockhart Iron & Steel Co 22
Lodge & Shipley Mch. Tool Co. 66
Loraln Fdry Co. 25
Lord Bros. Mfg. Co. 53
Louden Mchy. Co 118
Lowell Scale Co. 79
Loyd, John 103
Lucas & Gilem 62
Ludlow-Saylor Wire Co. 9
Lukasch, J. W. 73
Lukens Iron & Steel Co. 21
Lunkenheimer Co. 126
Lusch, H. B. 17
Lyon, N. 99

M

McCabe, J. J. 66
McCabe Hanger Mfg. Co. 16&105
McCaffrey File Co. 94
McClure, G. W. Son 28
McCoy, Jos. F. Co. 42
McFarland, Wm. 7
McGowan, J. H. & Co. 37
McIntyre, Elmer E. 85
McKay, Jas. & Co. 20
McKinney Mfg. Co 100
McKinnon Dash Co. 113
McLain E. S. & Son 27
McNab & Harlin Mfg. Co. 35
McNeal Pipe & Foundry Co. 31
Magnolia Metal Co
Main Belting Co. 39
Maine Mfg. Co. 100
Manning, Maxwell & Moore 68
Manville Machine Co., E. J. 65
Markham Air Rifle Co. 110
Marshall & Huschart M'ch'ry Co. 67
Mason & Parker 85
Mason Regulator Co. 34
Massey Vise Co. 118
Matthiessen & Hegeler Zinc Co. 2
Maule, Francis I. 75
Maurer, H. & Son 27
Mayhew, H. H. Co. 92
Merchant & Co. 3
Merrell Mfg. Co. 50
Merrill Bros 1
Mersick, C. S. & Co. 52
Mesta Machine Co. 26
Metz, Aug. 34
Michigan Barrel Co 99
Michigan College of Mines 71
Michigan Washing Machine Co. 98
Mubradt, G. A. & Co 97
Miles, F. S. 15
Millar, C. & Son 128
Miller, Edward & Co. 119
Miller, H. J. 11
Miller & Van Winkle 128
Miller Bros. & Co. 29
Millers Falls Co. 78&128
Millett Core Oven Co. 109
Milne, A. & Co. 20
Milton Mfg. Co. 15
Milwaukee Hay Tool Co. 116
Milwaukee Tack Co. 14
Miner & Peck Mfg. Co. 55
Minnesota Iron & Steel Co 23
Mohr, J. J. 20
Monarch Cycle Mfg Co. 108
Monce, S. G. 80
Mooney, W. M. & Co 113
Moore, C. P. 97
Moore, Franklin Co. 17
Morgan Construction Co. 10
Morgan Spring Co. 5
Morley Bros. 97
Morrison, Robert 36
Morse Twist Drill & Machine Co. 49
Morse, Williams & Co. 41
Morton, Thos 105
Morton Mfg. Co. 48
Moseley Iron Bridge & Roof Co. 17
Mossberg, Frank, Co. 110
Mossberg & Granville Manufacturing Co. 62
Mumford, A. 79
Murdock Parlor Grate Co. 51
Myers, F. E. & Bro. 101

N

Nashua Iron & Brass Foundry Co. 31
National Cycle Mfg. Co. 111
National Foundry Co. 26
National Horse Nail Co 113
National Machinery Co. 49
National Pipe Bending Co. 32
National Saw Co. 89
National Specialty Mfg. Co. 100
National Tube Wks. Co. 30
Naugatuck Mfg. Co. 37
Ness, Geo. M., Jr. 89
New Brunswick Foundry Co. 26
New Castle Engineering Works 29
New Doty Mfg. Co 58
New England Steel Casting Co. 27
New Haven Mfg. Co. 50
New Haven Wire Mfg. Co. 5
N. J. Iron & Metal Co. 71
N. J. Wire Cloth Co. 12
N. Y. Machinery Depot 66
N. Y. Wire Cloth Co. 13
Ney Mfg. Co. 118
Niagara Machine & Tool Works 56
Niagara Paper Mills 82
Nichols Bros. 82
Nicholson File Co. 93
Nicolls, Wheeler & Co. 25
Niles Tool Works 67
Nilson, A. H. Mch. Co. 49
Norristown Wire Co. 7
North American Metalline Co. 3
North Bros. Mfg. Co. 78
Northampton Emery Wheel Co. 45
North Carolina Mica Co. 109
Northfield Knife Co. 82
Norton & Jones Mach. Tool Wks. 52
Norton Door Check & Spring Co. 105
Norton Emery Wheel Co. 45&90
Norwalk Iron Works Co. 37
Nut & Washer Mfg. Co. 15
Nuttall, R. D. Co. 59

O

O'Donnell, James 23
Ogden & Wallace 21
Ohio Pipe Co. 32
Oneida Community 104
Osborn Mfg. Co. 106
Osborne, D. M. & Co. 72
Ossawan Mills Co. 127
Ostrander Fire Brick Co. 27
Ostrander, W. R. & Co. 89
Otis Steel Co. 24

P

Palmer, I. E. 112
Palmer Bros. 34
Palmers & De Mooy Fdry Co. 28
Palmer Hardware Mfg. Co. 78
Parker Bros. 98
Parry Mfg. Co. 114
Passaic Rolling Mill Co. 21
Patch, F. R. Mfg. Co. 51
Pawling & Harnischfeger 42
Paxson, J. W. Co. 45
Peck, Stow & Wilcox Co. 96
Pedrick & Ayer Co. 36
Pelouze Scale & Mfg. Co. 118
Perry, Wm. H. Co. 71
Peru Electric Mfg. Co. 80
Peters Cartridge Co. 109
Phenix Tube Co. 16
Phila. Lawn Mower Co. 116
Phila. Machine Screw Works. 16
Phila. Machine Tool Co. 57
Phila. Roll & Machine Co. 26
Phillip's Sons, E. R. 29
Phillips, F. & Sons 32
Phoenix Horseshoe Co. 113
Phoenix Iron Co. 21
Phosphor Bronze Smelting Co. 3
Pierson & Co. 24
Pike Mfg. Co. 82
Pilling & Crane 1
Pitkin, A. B. Machinery Co. 66
Pittsburgh Mfg. Co. 49
Pittsburgh Reduction Co. 76
Pittsburgh Screw & Bolt Co. 16
Pittsburgh Wire Co. 13
Pleuger & Henger Mfg. Co. 118
Plume & Atwood Mfg. Co. 2
Pollock, W. B. & Co. 35
Poole, Robt. & Son Co. 38
Pope Tube Co. 106
Port Chester Bolt & Nut Co. 15
Porter Screen Mfg. Co. 105
Potter & Johnston Co. 63
Potts, Horace T. & Co 25
Poulterer & Co. 66
Pratt Chuck Co. 47
Pratt, Wm. E. Mfg. Co. 105
Pratt & Whitney Co. 59
Prentice Bros. 64
Prentiss Tool & Supply Co. 68
Prentiss Vise Co. 95
Presbrey Stove Lining Co. 27
Proudman Bros. 49
Pugh, Job. T. 83
Pullman Cash Balance Co. 97
Putnam Nail Co. 114

Q

Quincy Hdw. Mfg. Co. 128
Quint, A. D. 59

R

Racine Economy Spring Co. 115
Rand Drill Co. 38
Randolph & Clowes 2
Rawson Electric Co. 79
Reade & Bowler 67
Reading Crane and Hoist Works. 105
Reading Hardware Co. 79
Red Jacket Mfg. Co. 101
Reece, E. F. Co. 51
Reed & Curtis Mch. Screw Co. 108
Reeves, Paul S. 128
Reeves Pulley Co. 42
R. I. Perkins Horse Shoe Co. 113
Rhode Island Tool Co. 15
Richard, F. J., Mch. Co., Ltd 43
Ridgway, Craig & Son 41
Ripley & Partlett 10
Riter-Conley Mfg Co. 18
Riverside Foundry Co. 26
Riverside Iron Works. 23
Roberts, A. & P. & Co. 22
Rockford Bolt Works. 16
Rogers, The Wm. Mfg. Co. 85
Root Bros. Co. 83
Rowell, W. G. & Co. 7
Rowland, William & Harvey. 128
Ryan, J. J. & Co. 6

S

Sabin Machine Co. 5
Saginaw Mfg. Co. 43
Sague, Samuel A. 29
St Joseph Pump & Mfg Co. 100
St. Louis Electrotype Foundry. 75
St. Louis Shovel Co 117
Samson Cordage Works. 1
Samuel, Frank 21
Saunders' Sons, D. 50
Sawyer Tool Co 96
Scheeler's Sons. 10
Schneider & Trenkamp Co. 86
Schollhorn, Wm. Co. 92
Schoverling, Daly & Gales 109
Schrayers, M. Sons & Co. 92
Schwerdtle & Siebert. 93
Scott, Chas. Spring Co. 17
Scott, Geo. M. 37
Scottdale Iron & Steel Co. 29
Scovil, D. & H. 117
Scovill Mfg. Co. 2
Scranton Forging Co. 113
Scranton & Co., The 56
Seaman, Sheeth Co. 26
Seaman, D. C & Co. 72
Seidel & Hastings Co. 23
Sellers, Wm. & Co. 42
Seneca Falls Mfg. Co. 62
Sennett, Geo. B. Co. 35
Sessions Foundry Co 28
Seward, M. & Son Co. 111
Seyfert's Sons, L. F. 66
Sheble & Klemm. 116
Shelby Steel Tube Co. 77
Shelton Co. 11
Sherman, H. B. Mfg. Co. 102
Shiffler Bridge Co. 17
Shultz Belting Co. 1
Shuster, F. B. Co. 55
Sibley & Ware 52
Sickels & Nutting Co. 85
Sigourney Tool Co. 53
Silver Lake Co. 105
Silver Mfg. Co. 54
Simonds Mfg. Co. 80
Singer, Nimick & Co. 23
Skinner Chuck Co. 47
Slocomb, J. T. & Co. 94
Smith & Egge Mfg. Co. 87
Smith, M. B. 71

Smith, Thos. & Co 17
Smooth On Mfg. Co..... 59
Smythe, S. R. Co., Inc..... 29
Snell Mfg. Co..... 83
Snow, L. T..... 127
Snow Wire Works..... 94
Snyder, W P. & Co..... 24
Sommer's Son, John..... 128
Southwark Fdry. & Mch. Co..... 34
Speidel, J. G..... 42
Spencer's, I. S. Sons..... 29
Spencer Automatic Mch. Screw Co.. 57
Spofford, W. S. & Son..... 17
Springfield Drop Forging Co..... 111
Springfield Mch. Screw Co..... 91
Springfield Mfg. Co..... 44
Standard Co..... 99
Standard Fdry. & Mfg. Co..... 27
Standard Scale & Supply Co..... 79
Standard Smelting Works..... 7
Standard Stamping & Die Co..... 75
Standard Tool Co..... 48
Stanley Rule & Level Co..... 127
Stanley Works..... 104
Star Heel Plate Co..... 86
Star Mfg. Co..... 92
Starr Bros. Bell Co..... 107
Starrett, L. S. Co..... 91
Steptoe, J. & Co..... 66
Sterling Cycle Works..... 107
Sterling Emery Wheel Co..... 44
Sternbergh, J. H. & Son..... 15
Stevens, J. Arms & Tool Co..... 111
Steward & Romaine Mfg. Co., Ltd.... 16
Stewart Iron Works..... 9
Stewart Wire Co 6
Stiles, E. S. Press Co..... 60
Stiles & Parker Press Co..... 61
Stillman & Hall, Ltd 75
Stimpson, Edw. B. & Son..... 14&15
Stocking E. B..... 7
Stokes Bros. Mfg. Co..... 94
Storm Mfg. Co..... 112
Stover Novelty Works..... 54
Stow Flexible Shaft Co..... 43
Stow Mfg. Co..... 43
Stowell Mfg. & Fdry. Co..... 102
Strieby & Foote Co..... 109
Stroud, E. H. & Co..... 21&25
Sturtevant, B. F. Co..... 64
Superior Charcoal Iron Co..... 24
Supplee Hardware Co..... 82
Swedish Razor Co..... 82
Sweetser, W. A..... 11
Swindell, W. & Bros..... 29
Syracuse Chilled Plow Co..... 117

T

Tabor Mfg. Co..... 34
Taintor Mfg. Co..... 92
Talcott, W. O..... 39
Talcott, Frisbie & Co..... 28
Tanite Co..... 128
Taplin Mfg. Co..... 103
Taunton Locomotive Mfg. Co..... 32
Taunton Wire Nail Co 14
Thomas & Lowe Machinery Co..... 51
Thompson, Hugh L..... 11
Thompson, J. & Sons Mfg. Co..... 35
Thomson, W. H. & Co..... 20
Tiebout, W. & J..... 88
Titchener, E. H. & Co..... 99
Tod, Wm. & Co..... 34
Toler, John Sons & Co..... 102
Toomey, Frank..... 66
Totten & Hogg Iron & Steel Fdy. Co..... 26
Tower Mfg. Co..... 13
Townsend, C. C. & E. P..... 14
Transue & Williams Co..... 113
Trenton Iron Co..... 4
Trenton Malleable Iron Co..... 27
Tretheway, Sam'l & Co., Ltd..... 22
Trimont Mfg. Co..... 95
Tudor Iron Works..... 1
Turner & Seymour Mfg. Co..... 29&104
Turner, Vaughn & Taylor Co..... 10
Tyler Wire Works Co., W. S..... 76

U

Uehling, Steinbart & Co., Ltd..... 31
Union Boiler Tube Cleaner Co..... 126
Union Fence Co 10
Union Metallic Cartridge Co 109
Union Mfg. Co..... 47
Union Mining Co..... 27
U. S. Clothes Pin Co..... 92
U. S. Electro Galvanizing Co..... 4
U. S. Fuel Oil Equipment Co..... 34&46
U. S. Steel Lock Co..... 103
Utica Drop Forge & Tool Co..... 92

V

Valentine, M. D. & Bro. Co..... 27
Van Dorn Iron Works Co..... 98
Vanduzen Gasoline Eng. Co..... 37
Van Wagoner & Williams Hardware Co..... 128
Varley Duplex Magnet Co..... 36
Veeder Mfg. Co..... 110
Vinton Colliery Co..... 73
Vitrified Emery Wheel Co..... 44
Vulcan Iron Works..... 47

W

Wais & Roos Punch & Shear Co..... 68
Wallace, Wm. H. & Co..... 25
Wallace Bros..... 85
Wardlow, S. & C..... 22
Ward, Edgar T. & Sons..... 24
Warner Charles Co..... 126
Washburn & Moen Mfg. Co..... 4
Waterbury Brass Co..... 2
Waterbury Farrel Foundry & Machine Co..... 11
Watson-Stillman Co..... 50
Wayne, Anthony, Mfg. Co..... 99
Weaver, Palmer & Richmond..... 100
Weber Gas & Gasoline Engine Co..... 118
Webster, Warren & Co..... 36
Wefugo Co..... 118
Welch, T. F. Mfg. Co..... 2
Westinghouse Machine Co..... 33
West Side Foundry Co..... 30
Wetherhill, Robt. & Co..... 127
Wheeling Hinge Co..... 103
Wheelock, Lovejoy & Co..... 22
Whitcomb Mfg. Co..... 56
White, I. & I. J. Co..... 83
White Mt. Freezer Co..... 87
Whitehurst, R. W. & Co..... 113
Whiting Foundry Equipment Co..... 42
Whitlock Coil Pipe Co..... 32
Whitney, A. R. & Co..... 20&24
Whiton, D. E. Mch. Co..... 47
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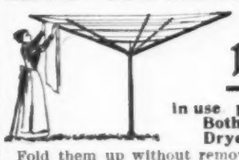

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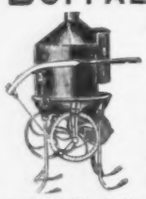
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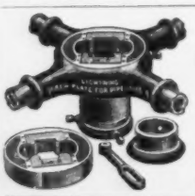
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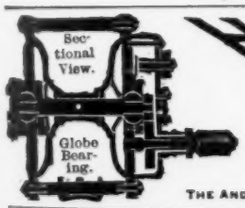

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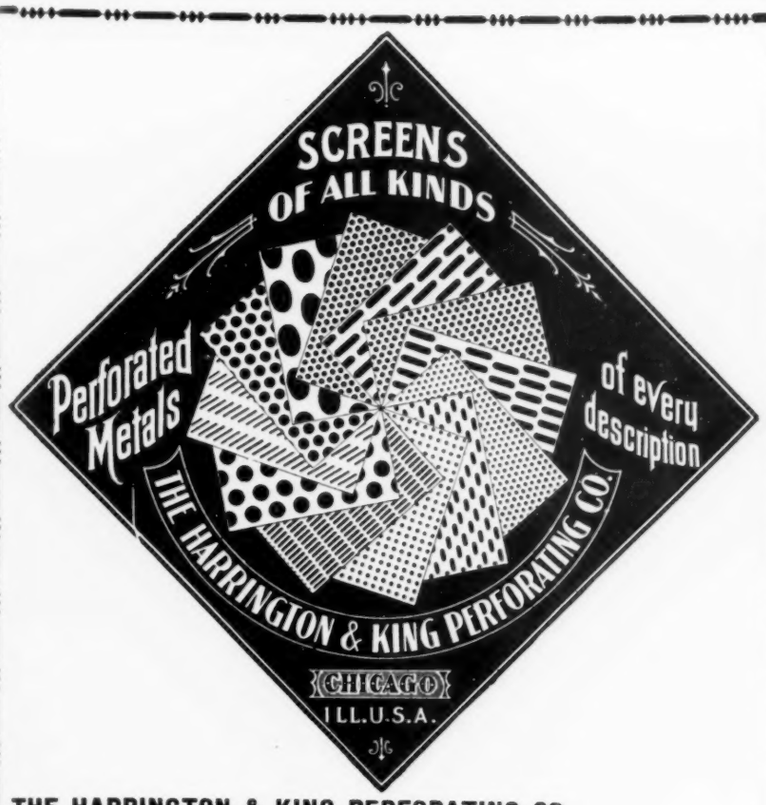

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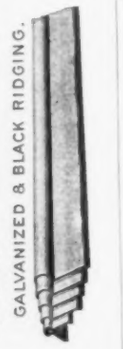

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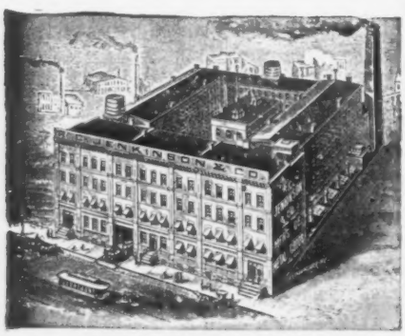

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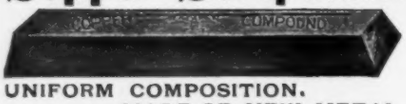

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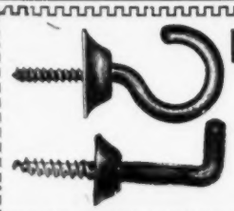

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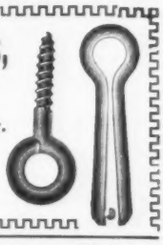

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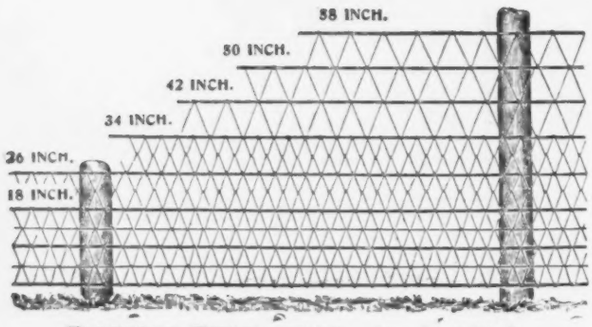

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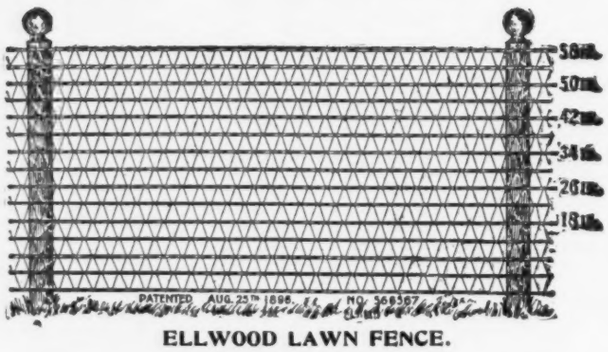

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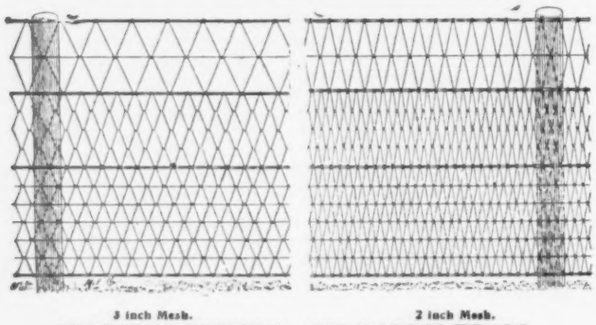

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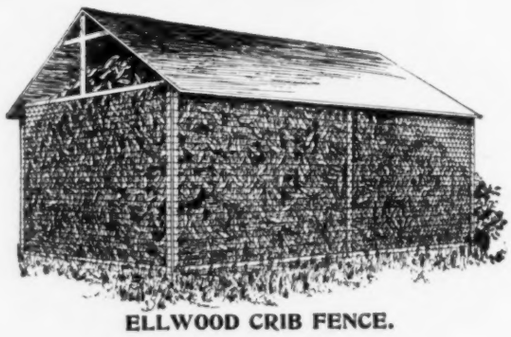

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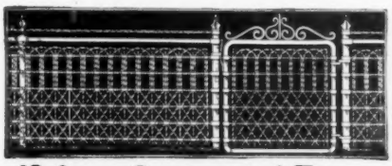

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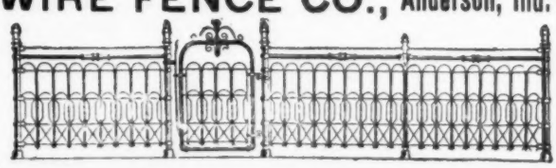

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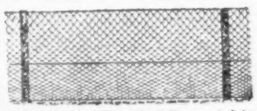

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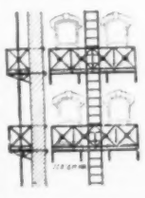

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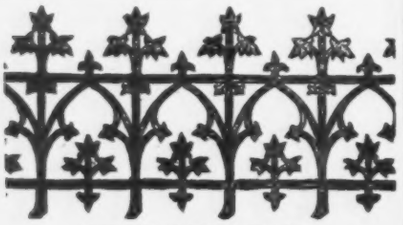

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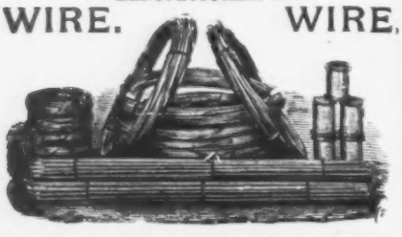

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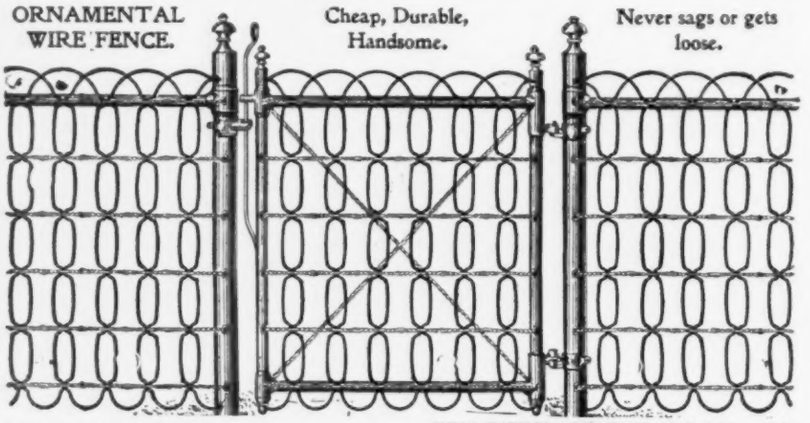

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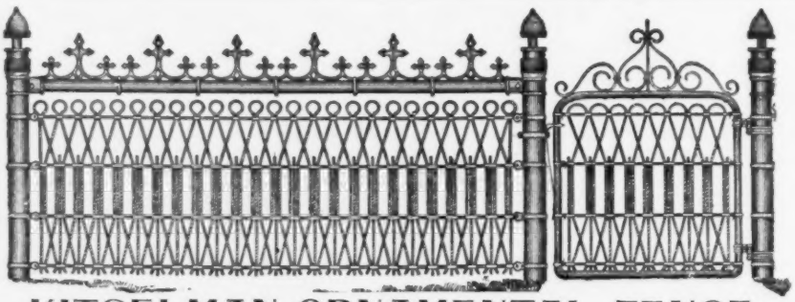

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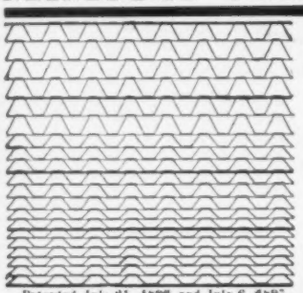

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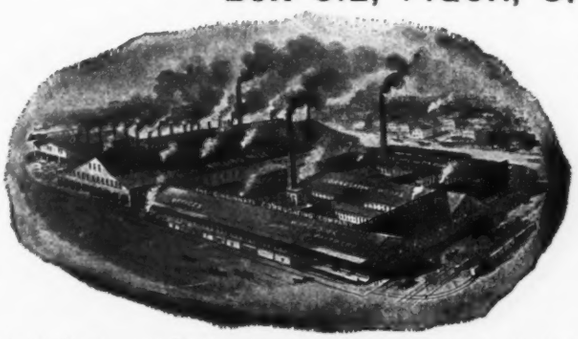

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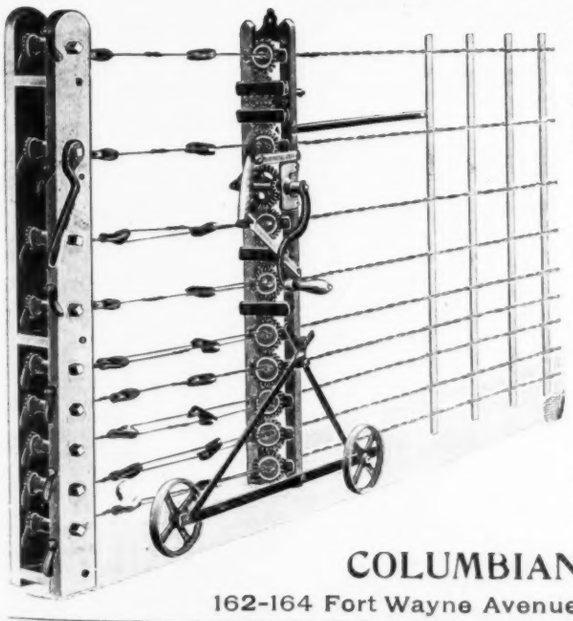

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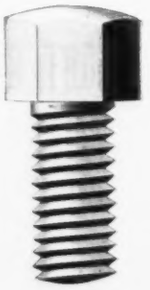

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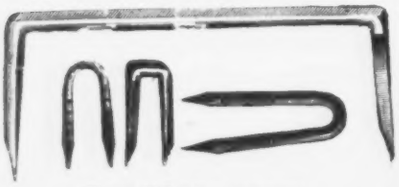

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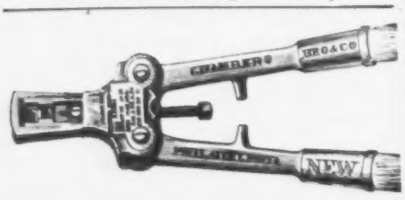

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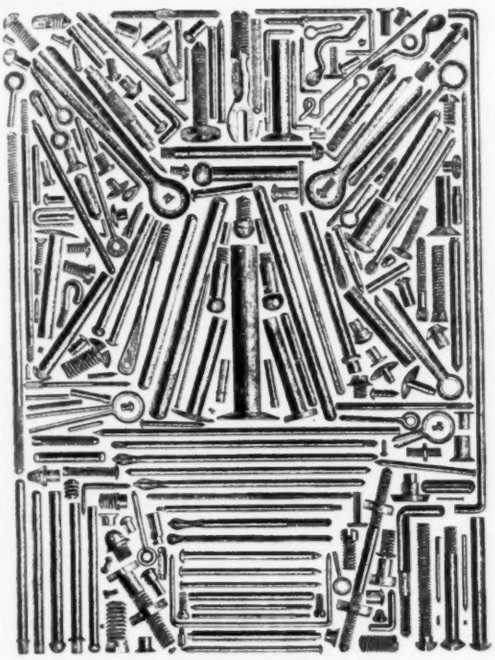

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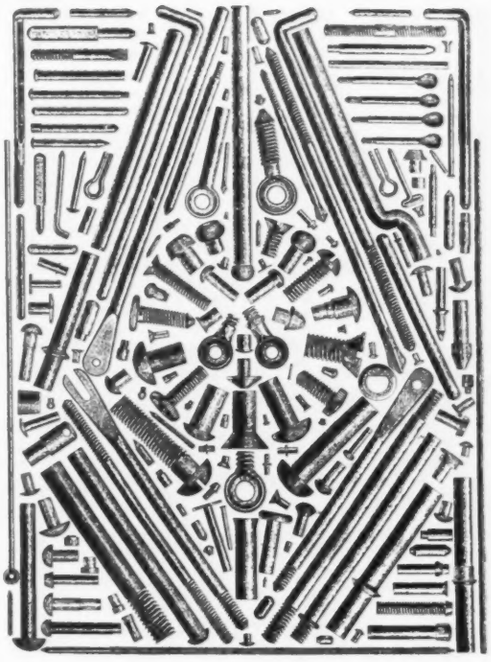

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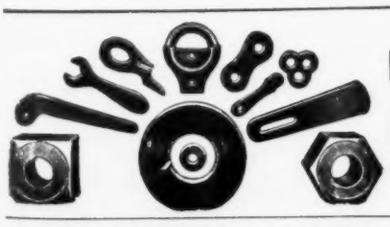

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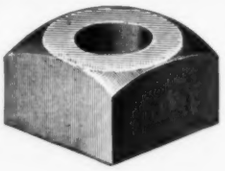

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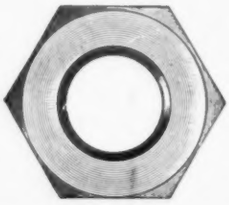

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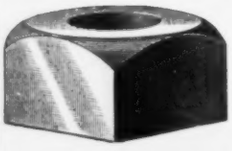

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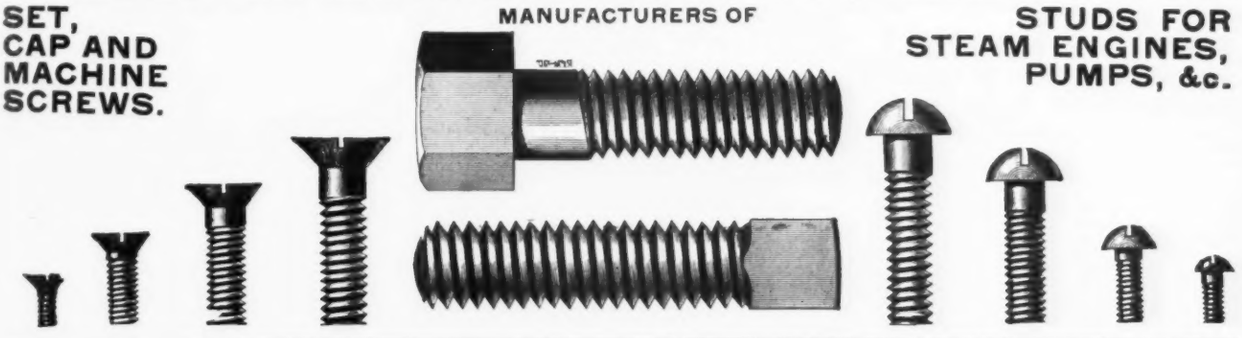

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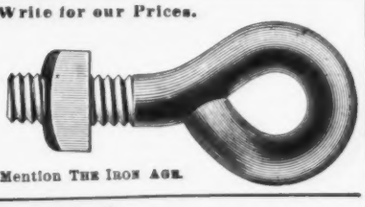

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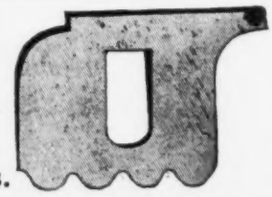

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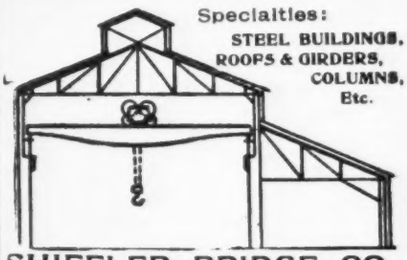

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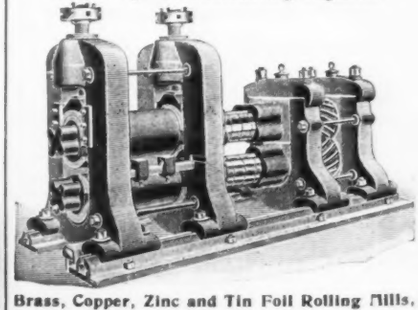

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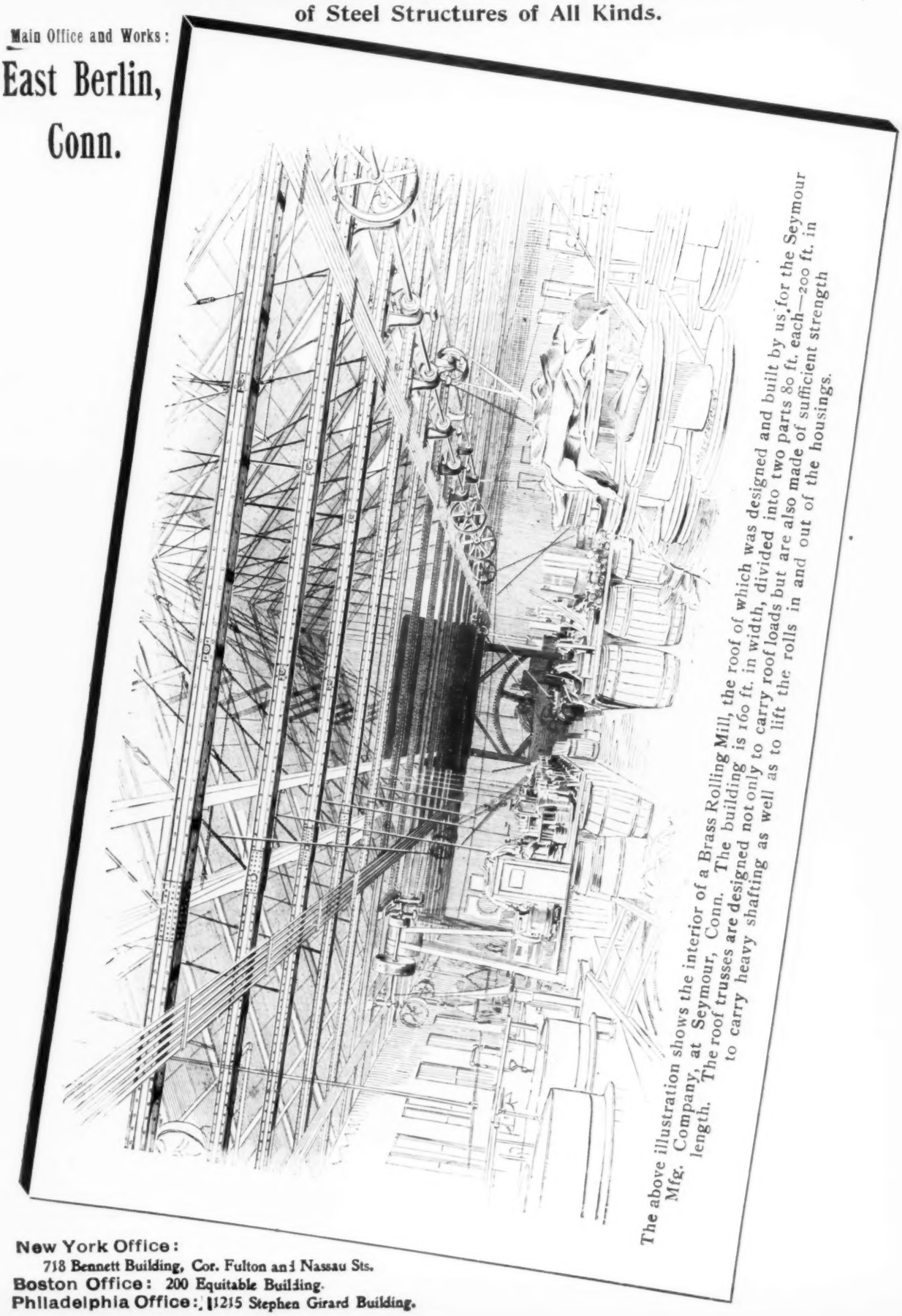

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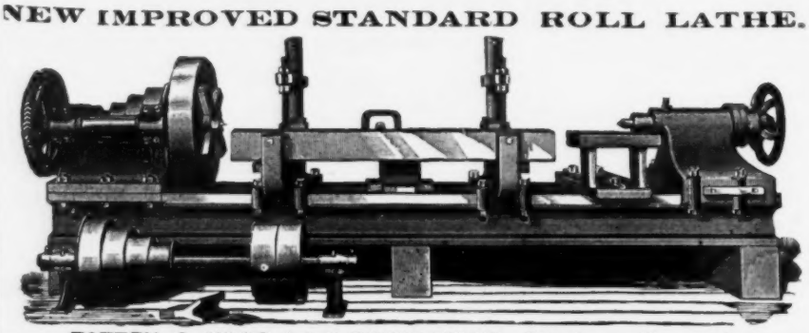

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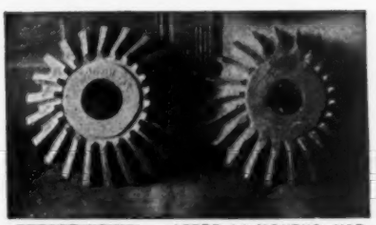

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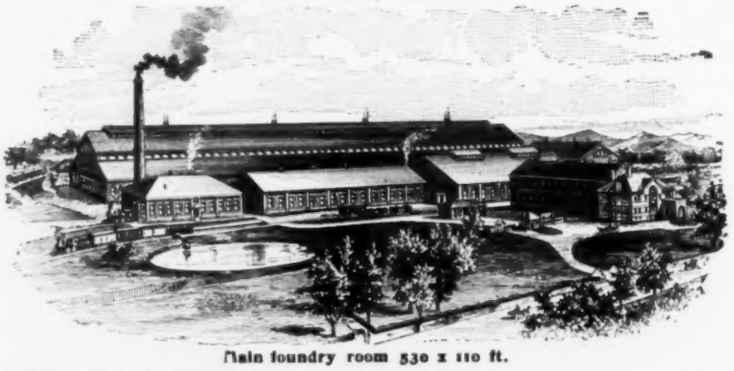

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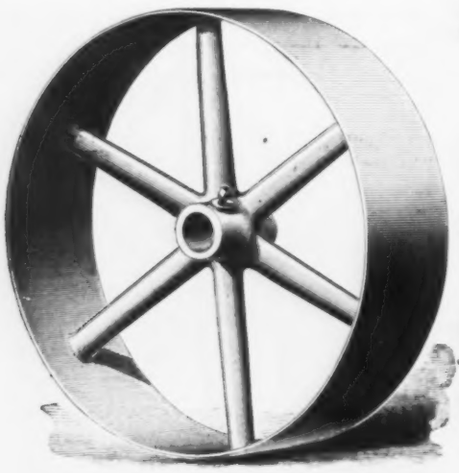

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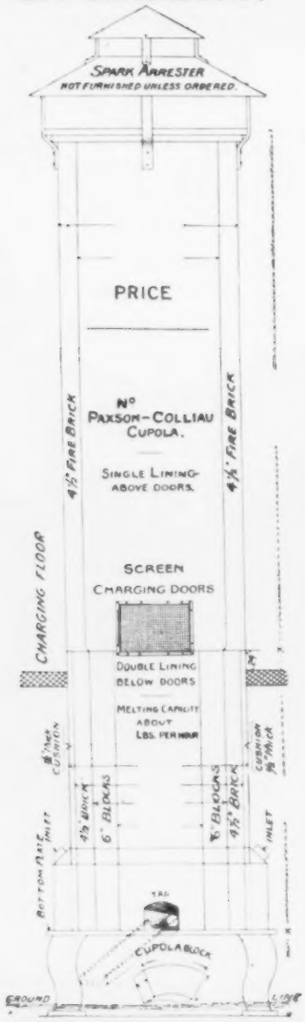

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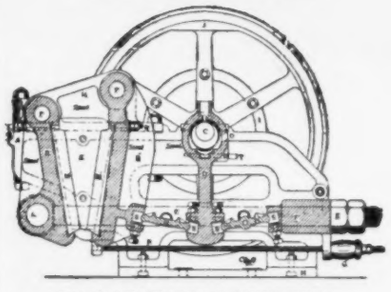

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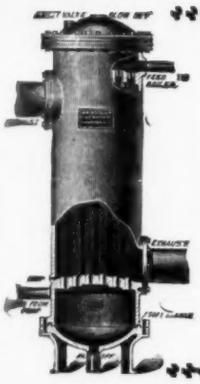

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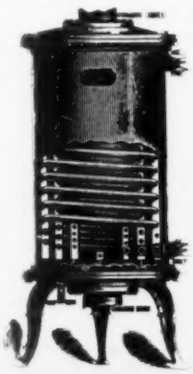

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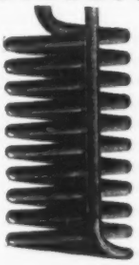

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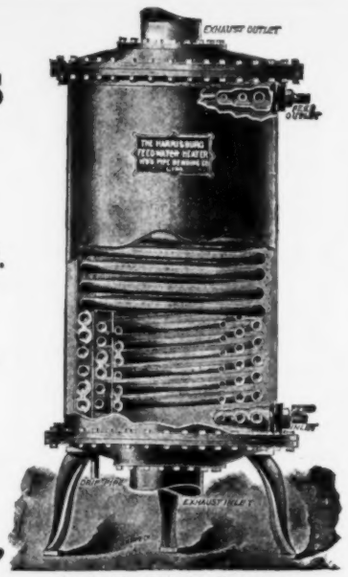

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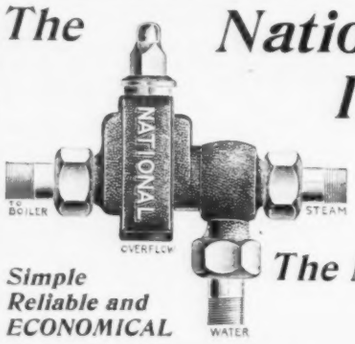

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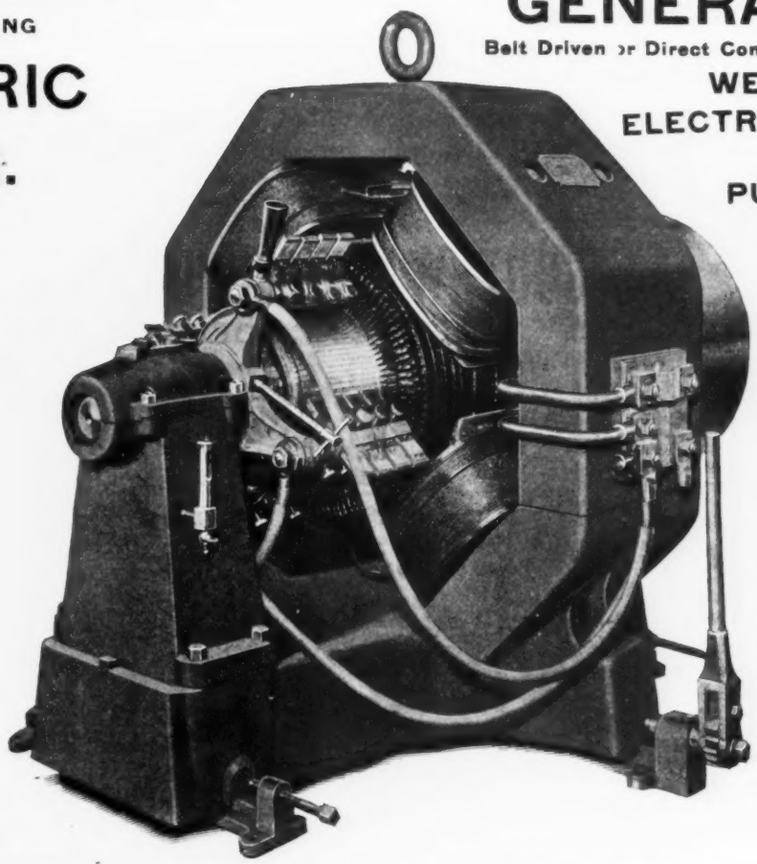

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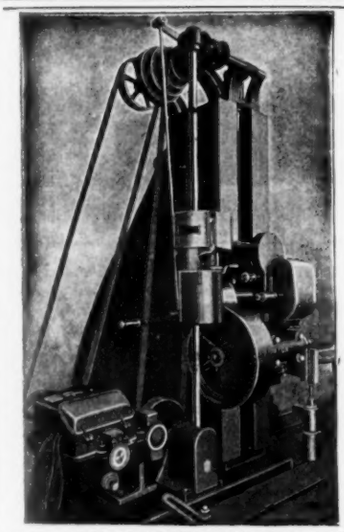

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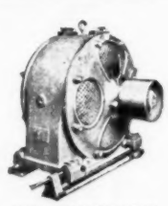

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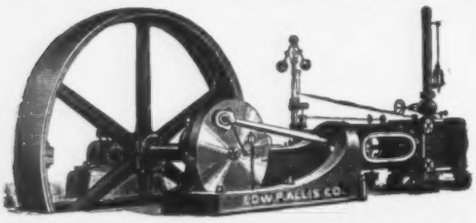

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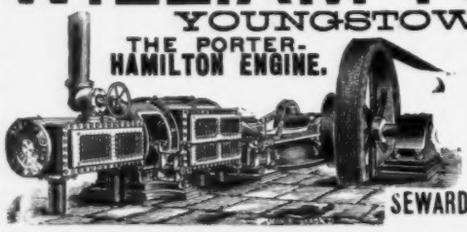

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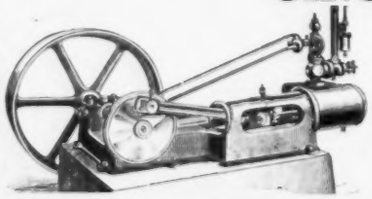

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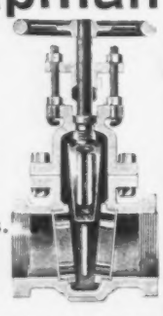

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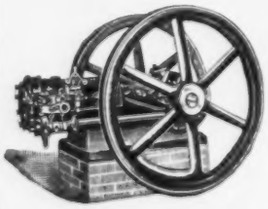

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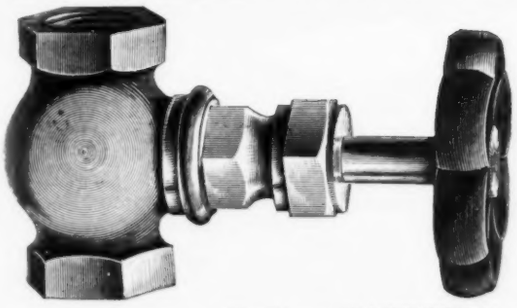

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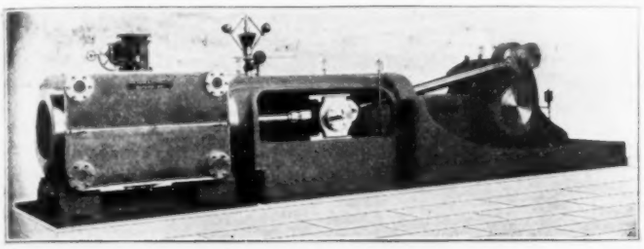

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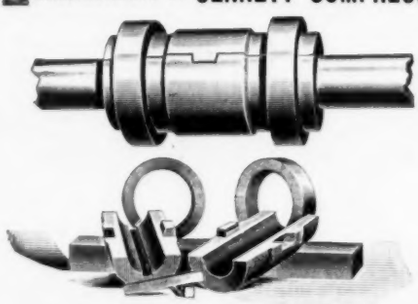

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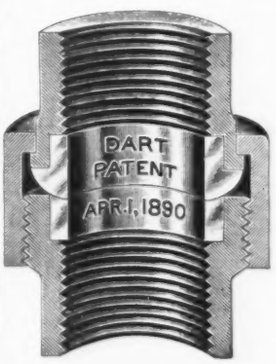

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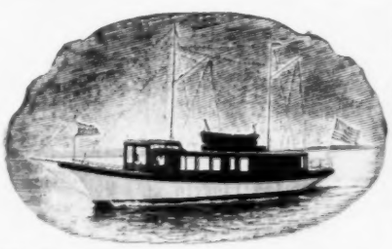

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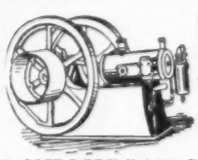

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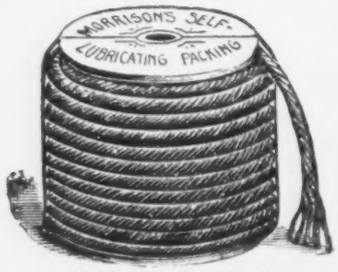

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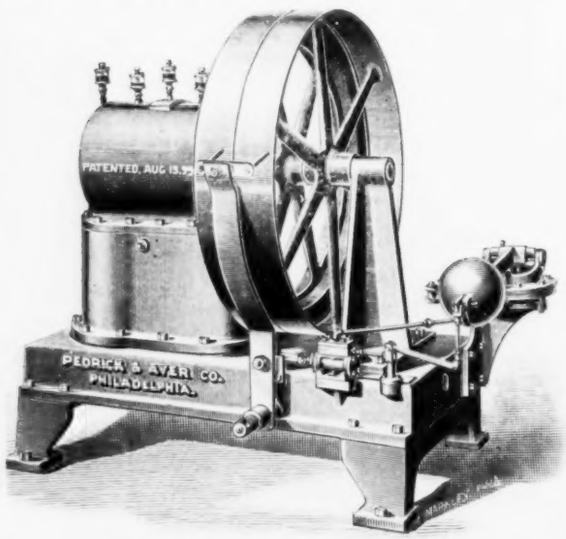

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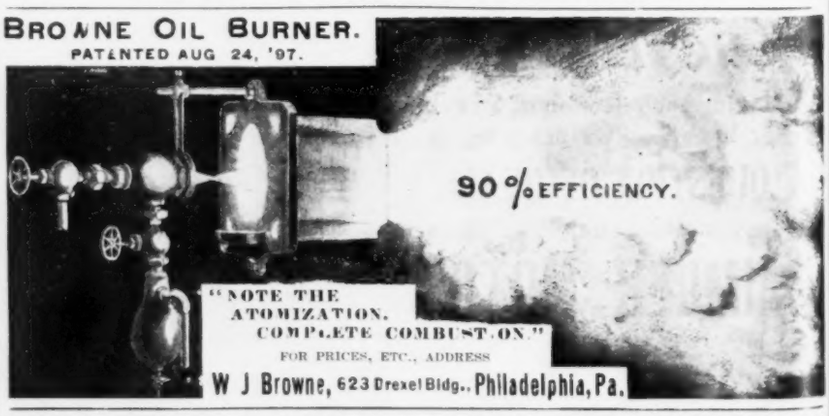

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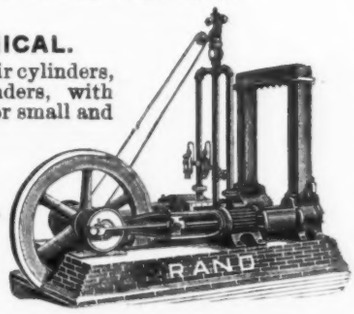

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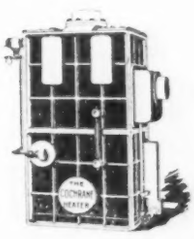

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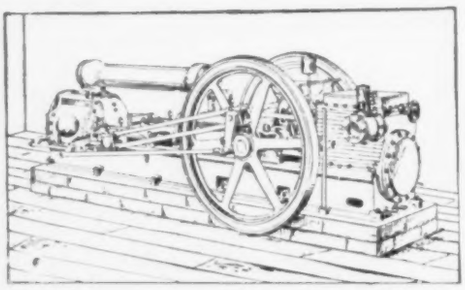

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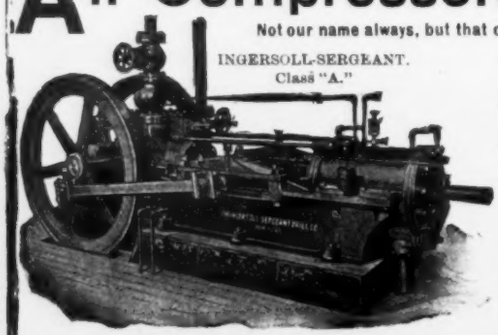

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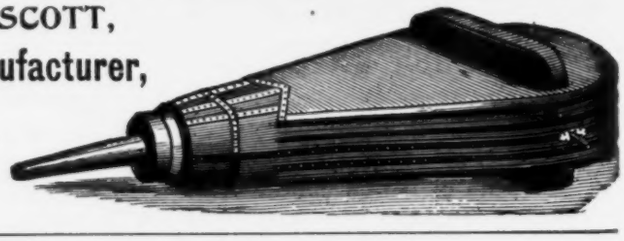

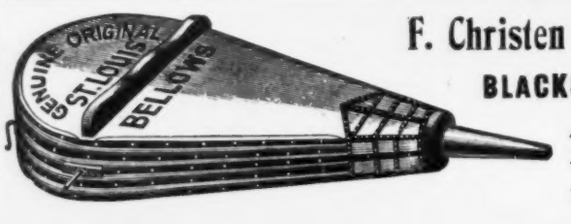

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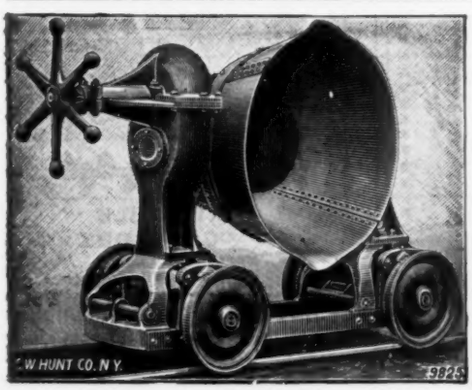

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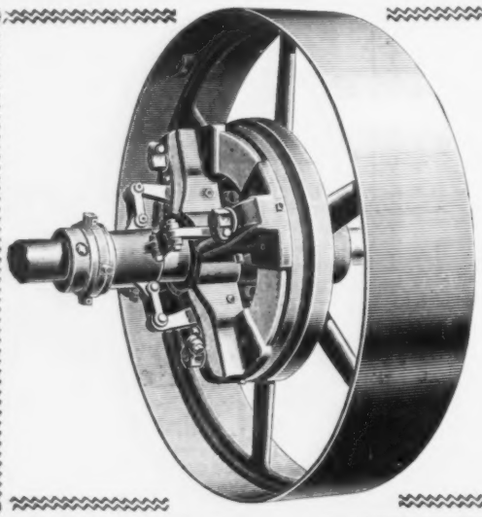

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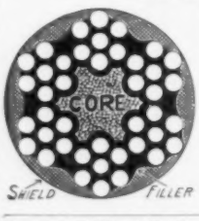

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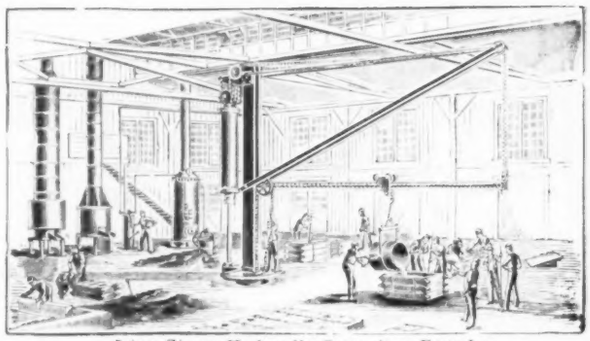

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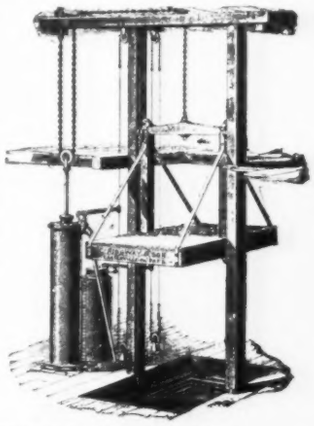

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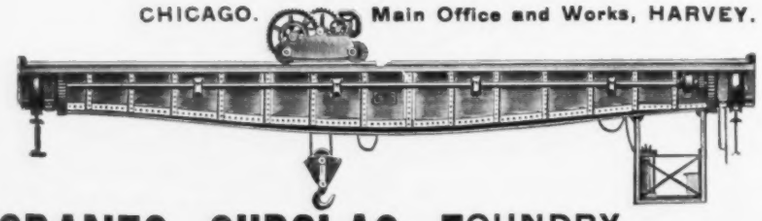

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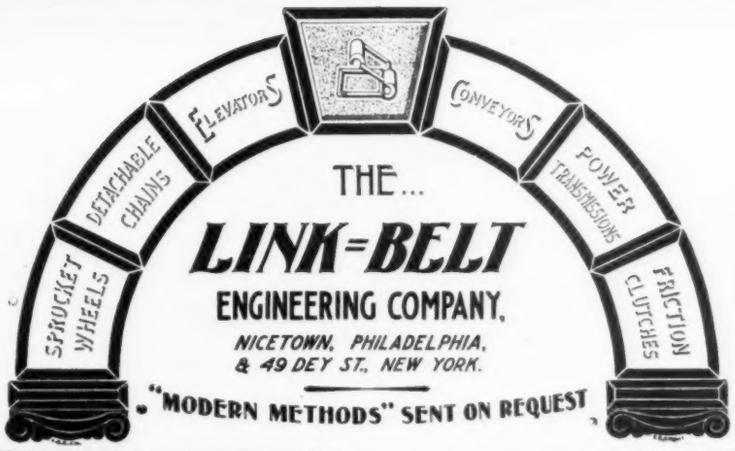

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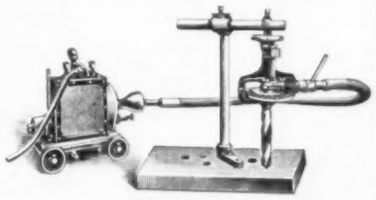

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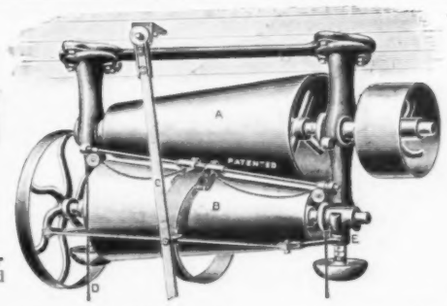

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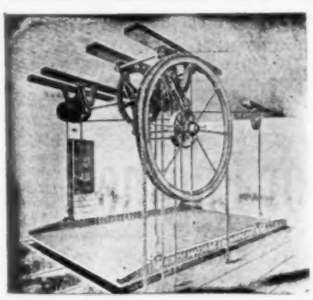

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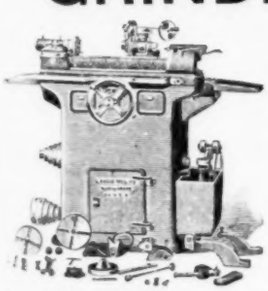

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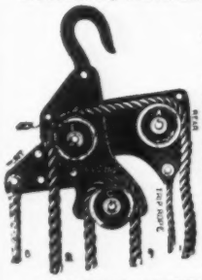

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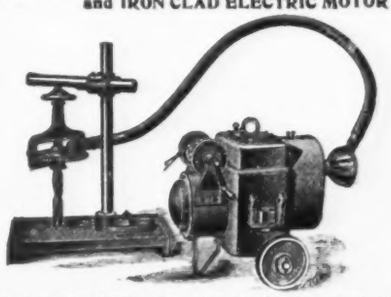

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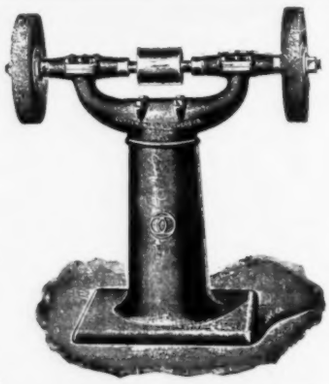

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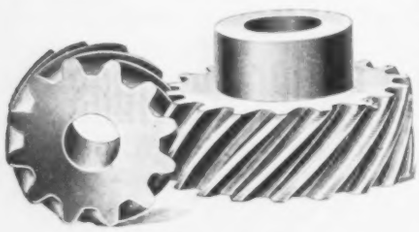

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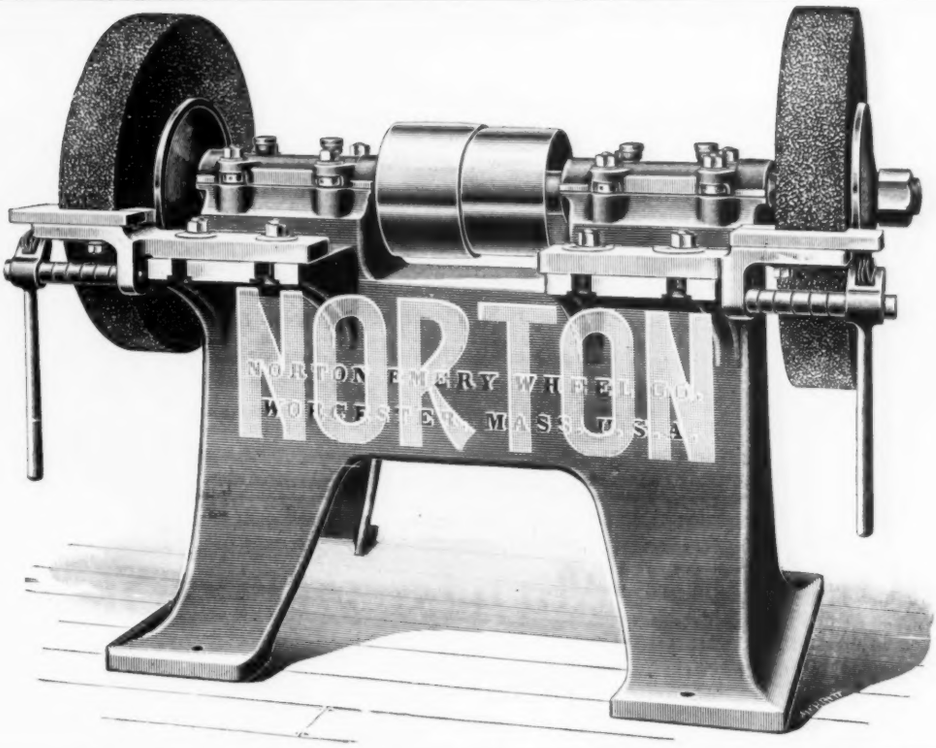

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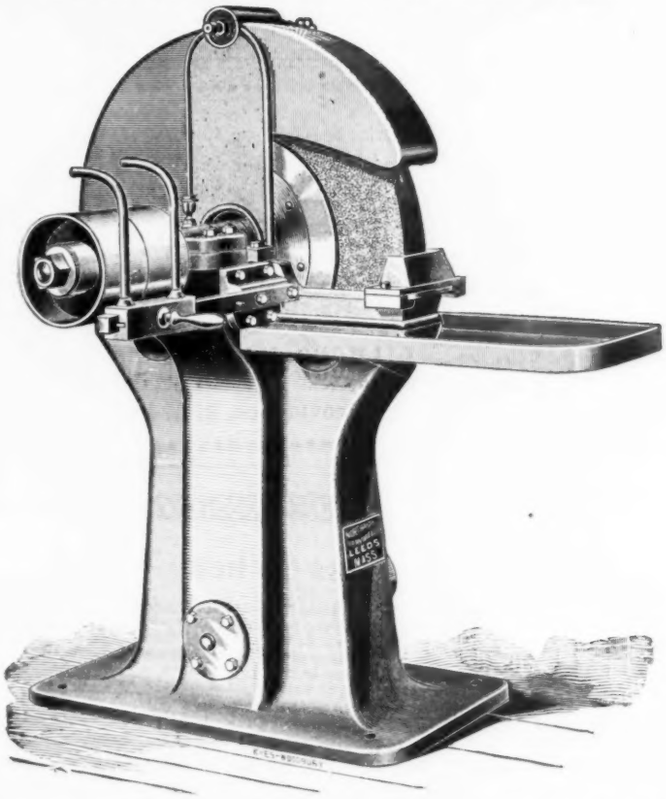

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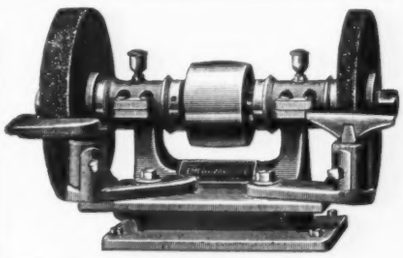

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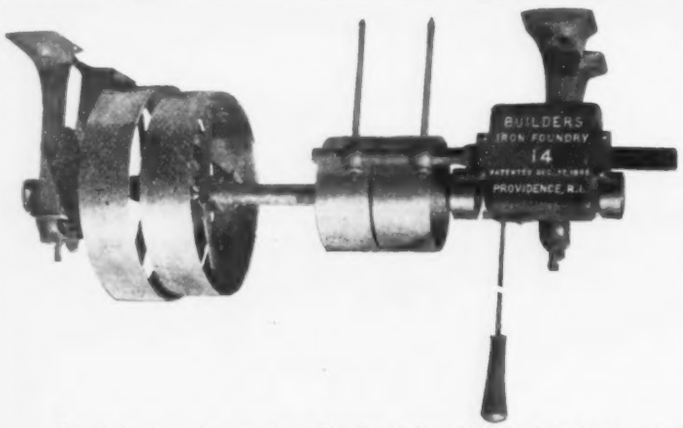

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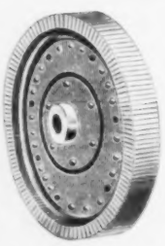

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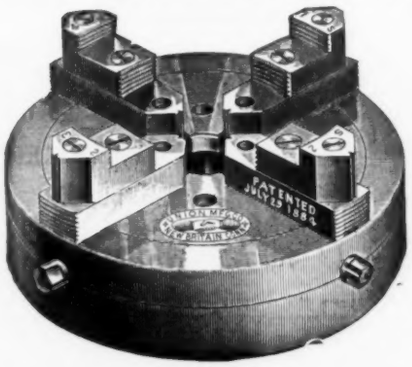

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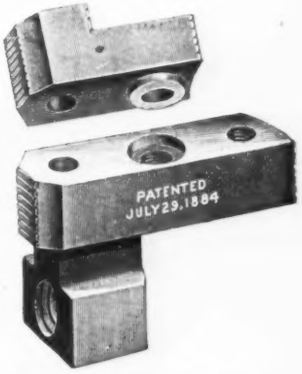

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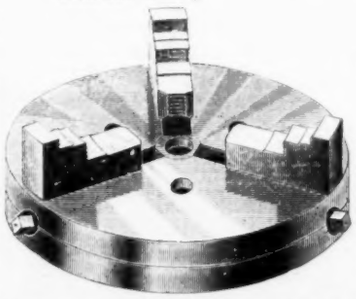

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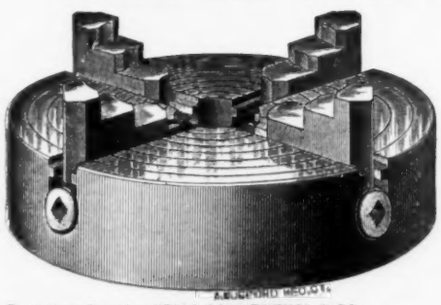

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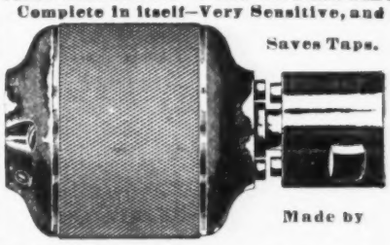

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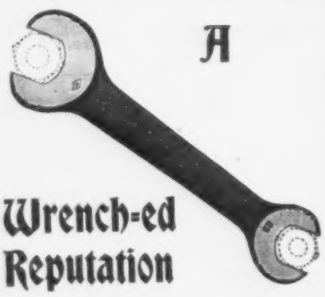

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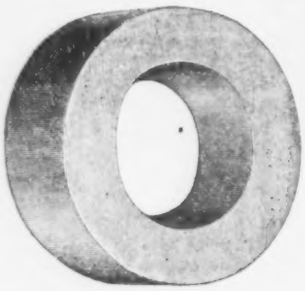

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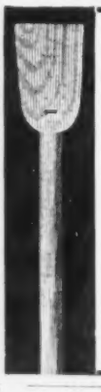

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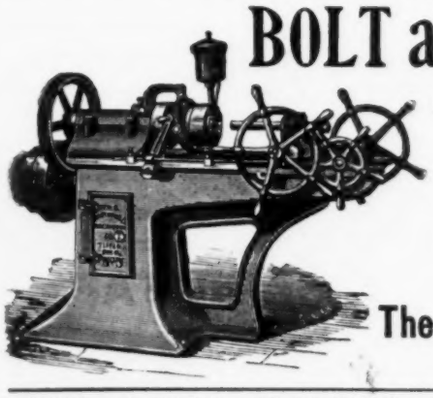

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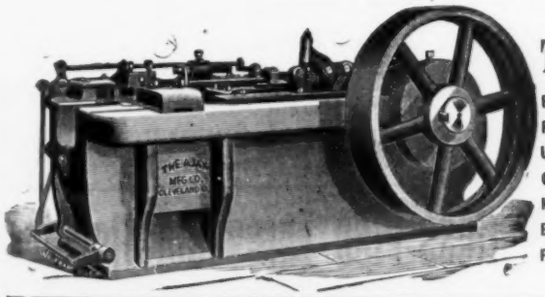

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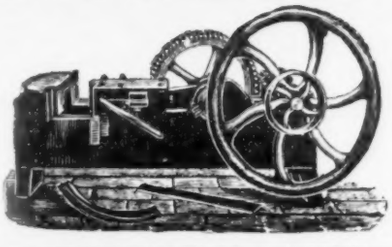

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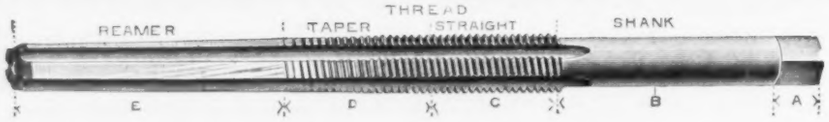

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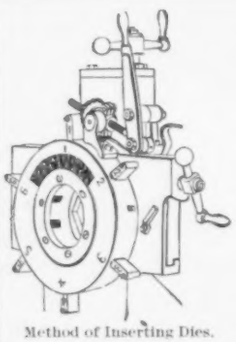

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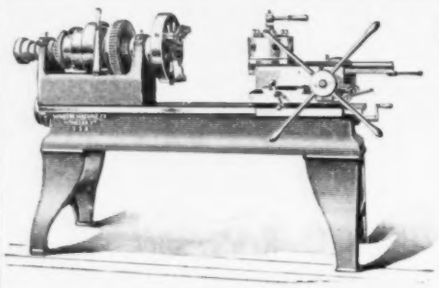

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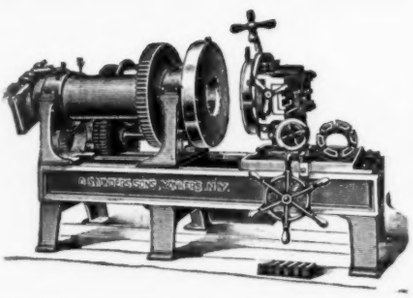

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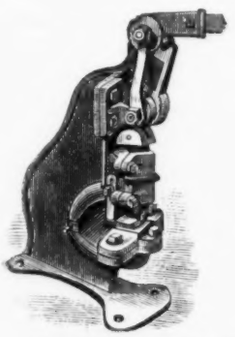

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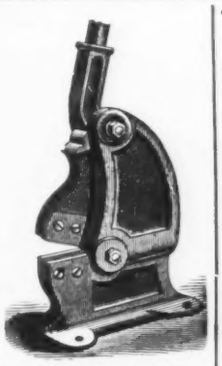

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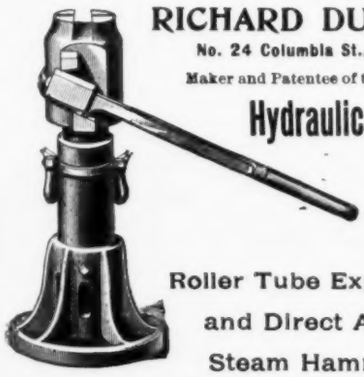

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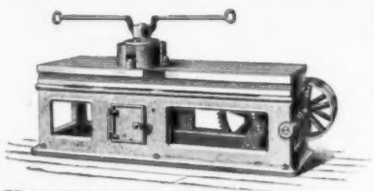

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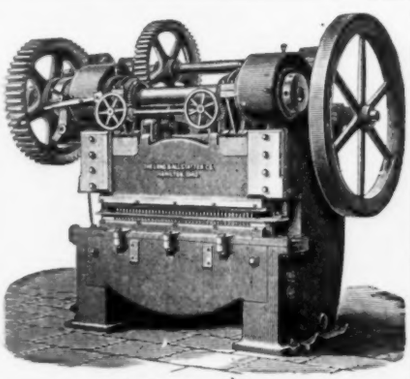

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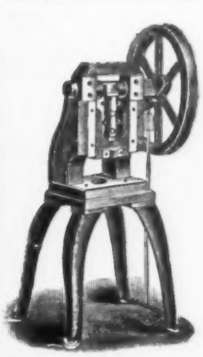

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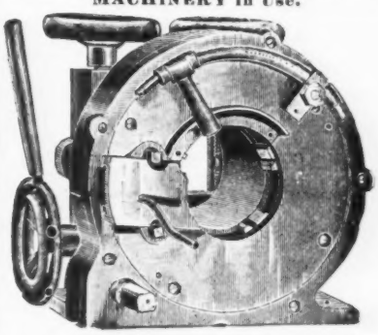

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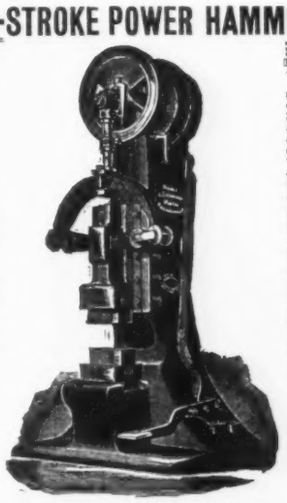

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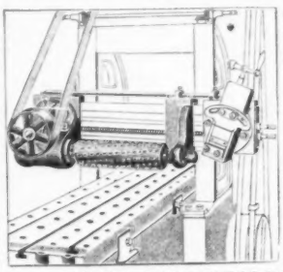

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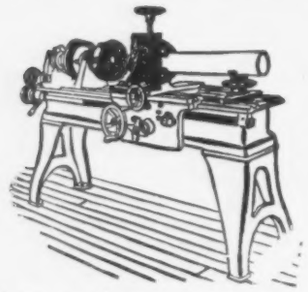

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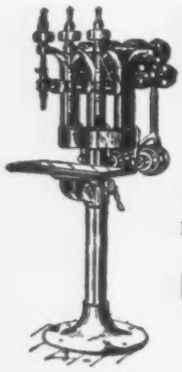

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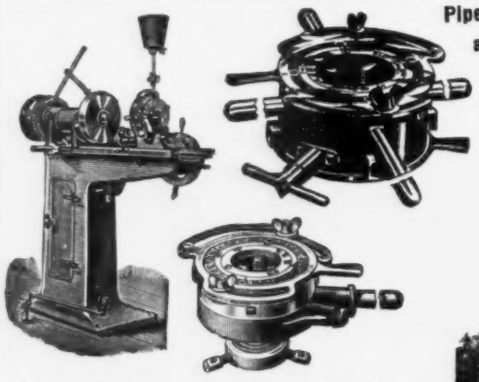

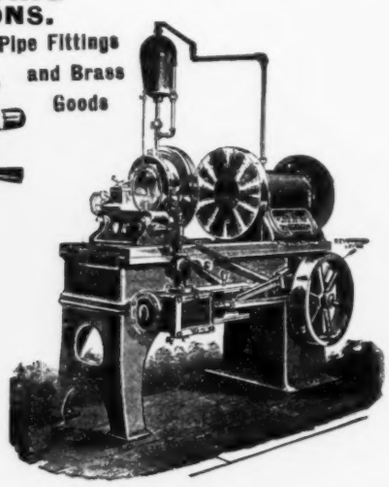

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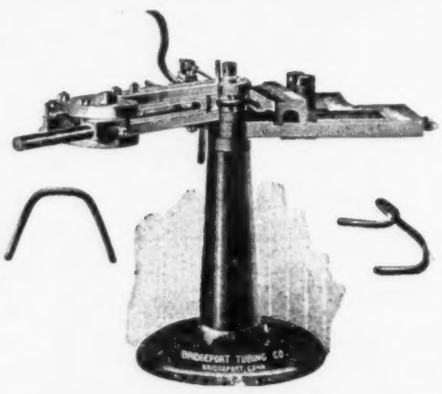

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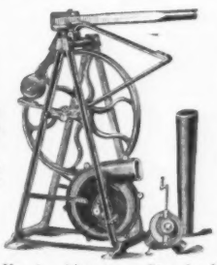
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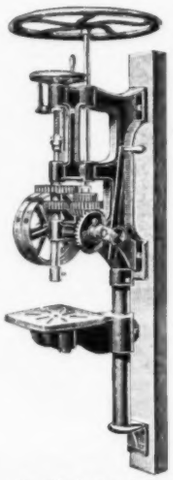
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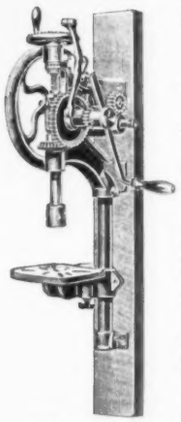
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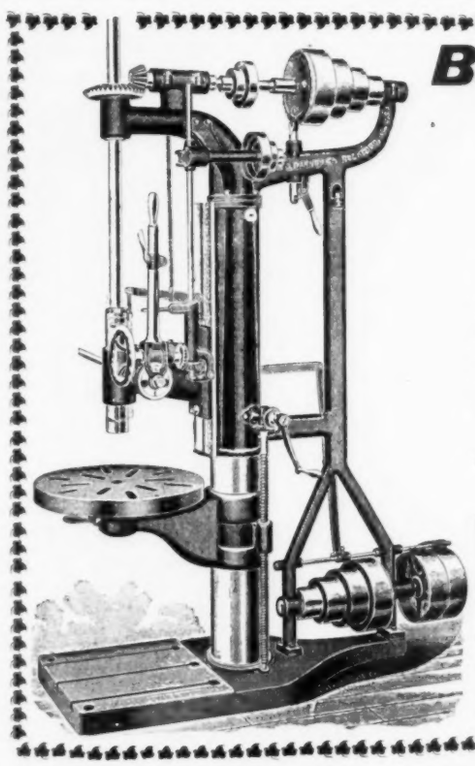

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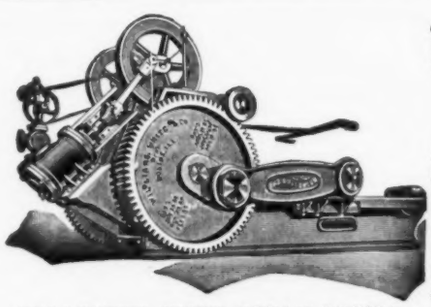

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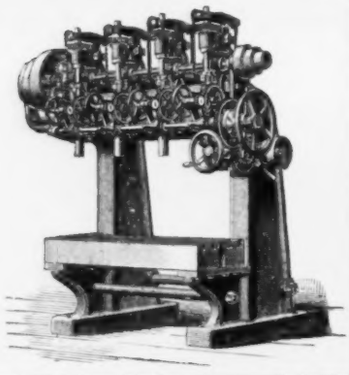

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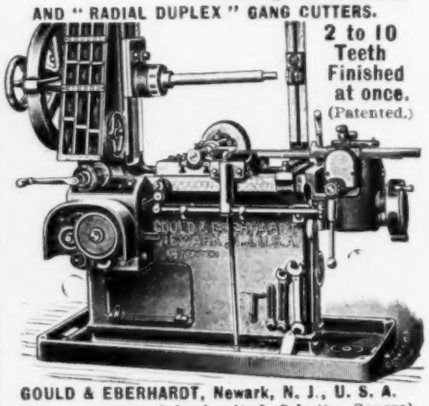

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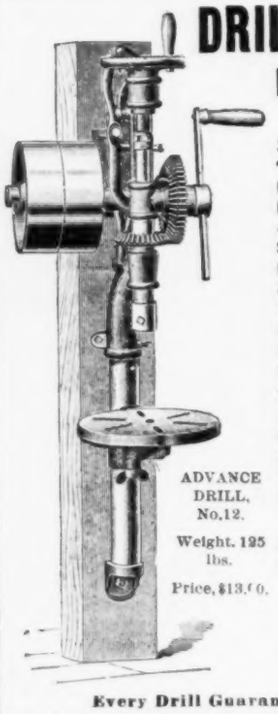

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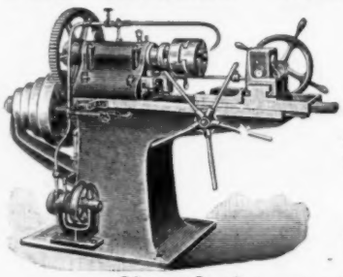

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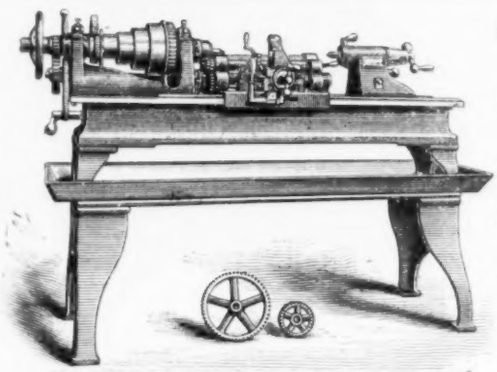

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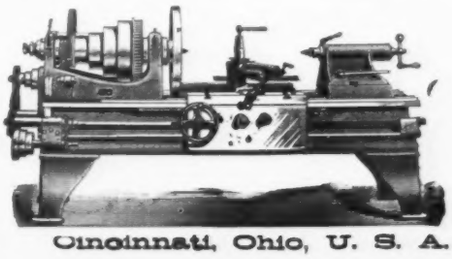

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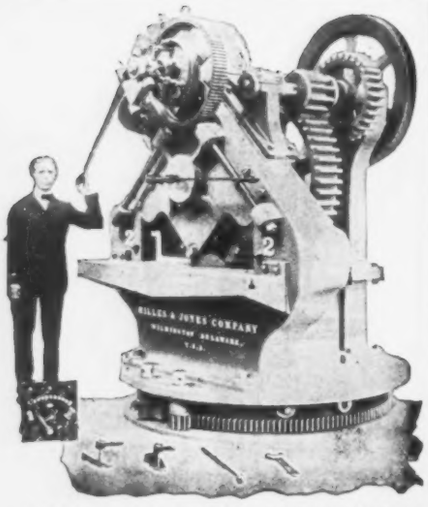

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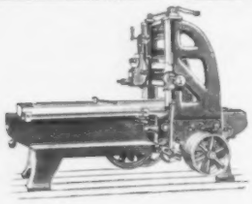

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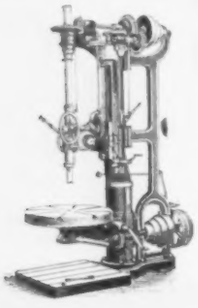

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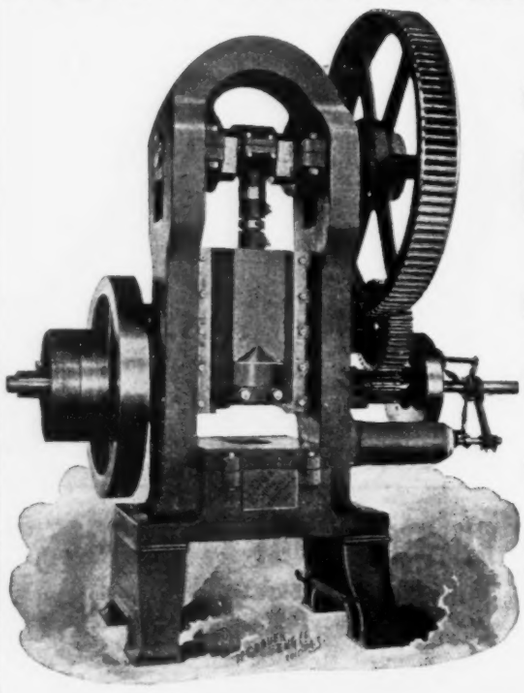

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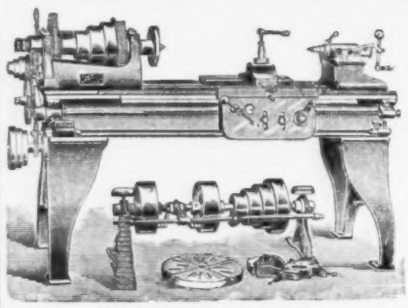

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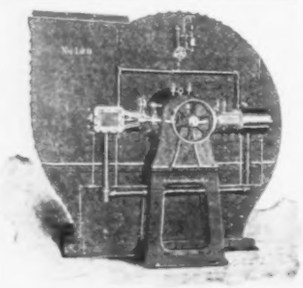

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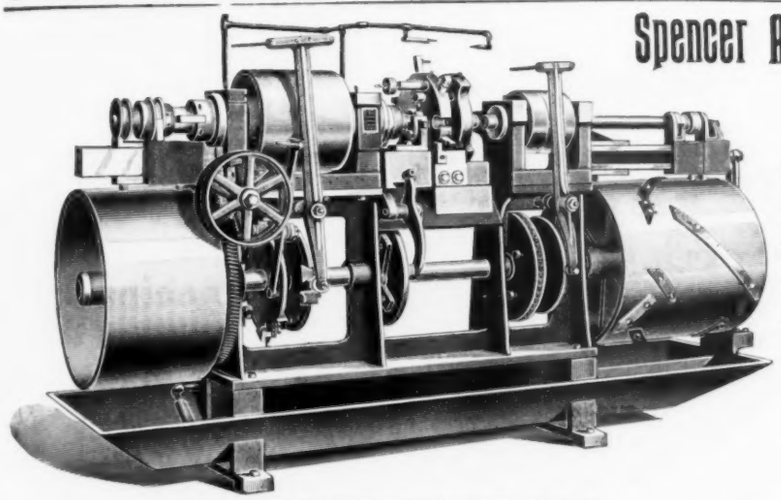

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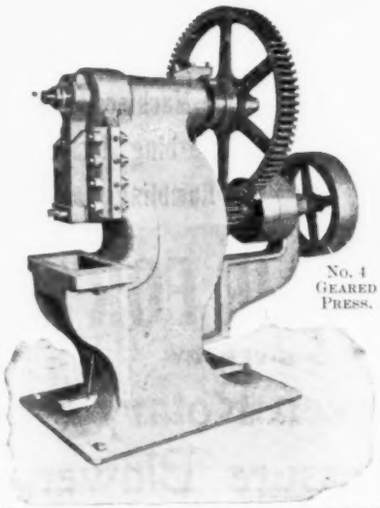

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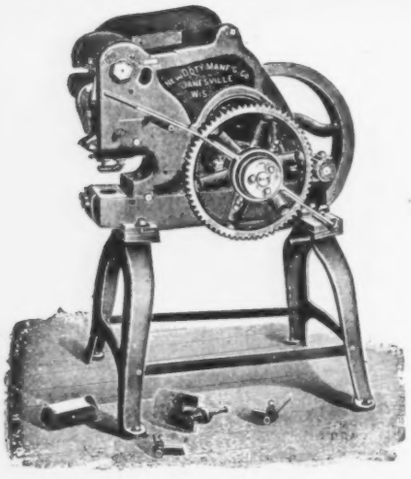

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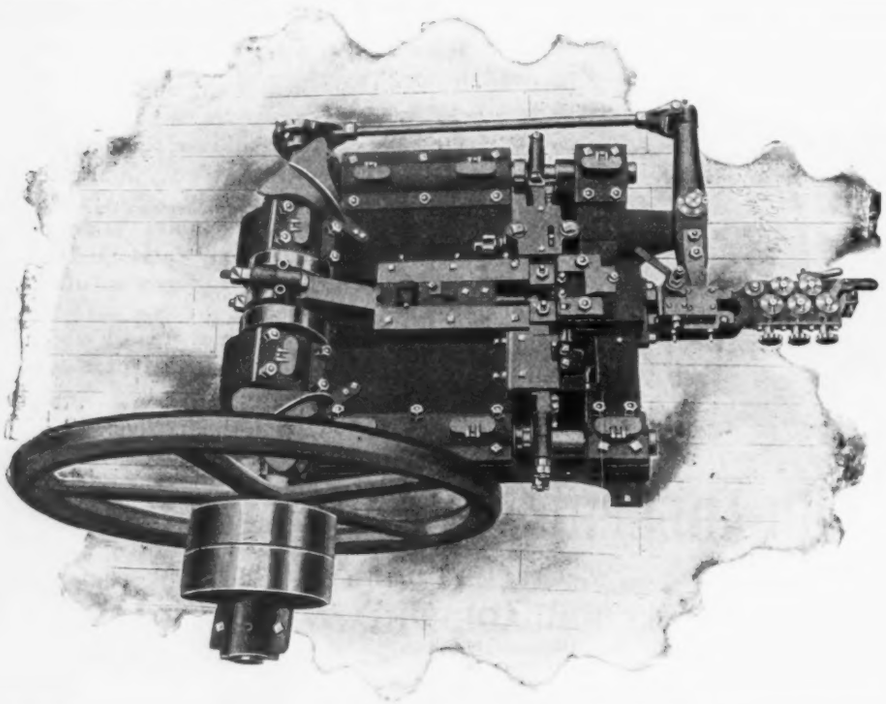

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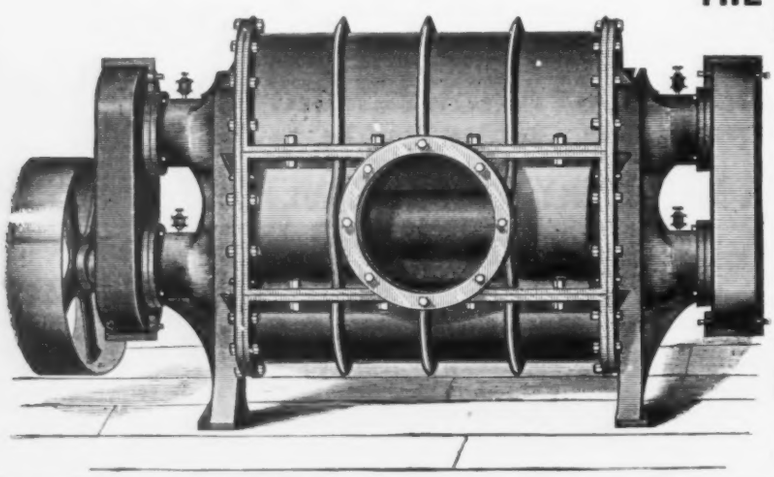

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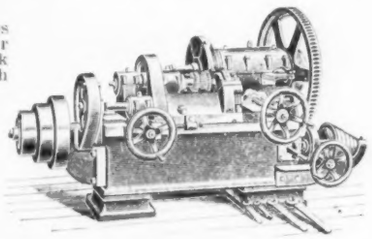

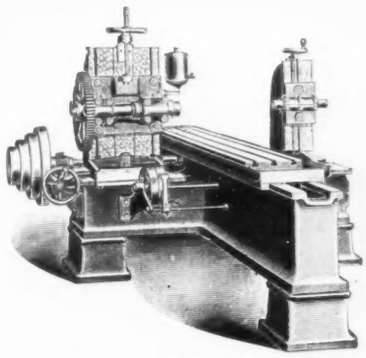

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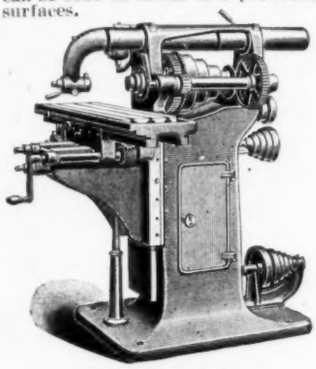

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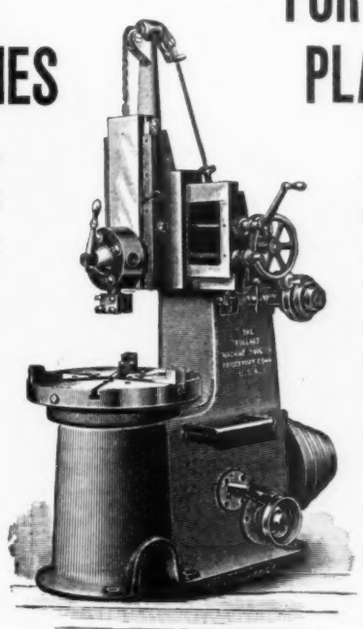

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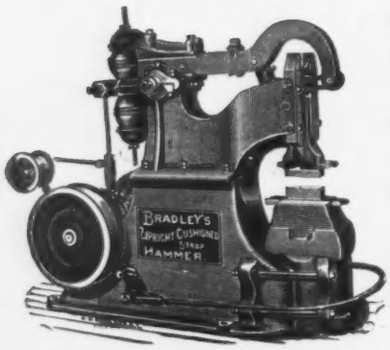

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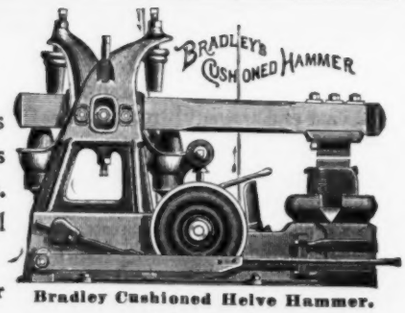

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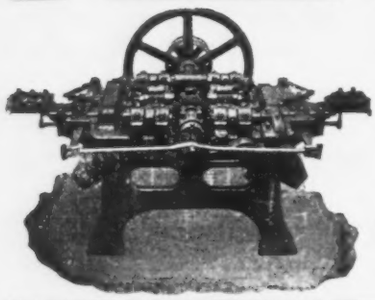

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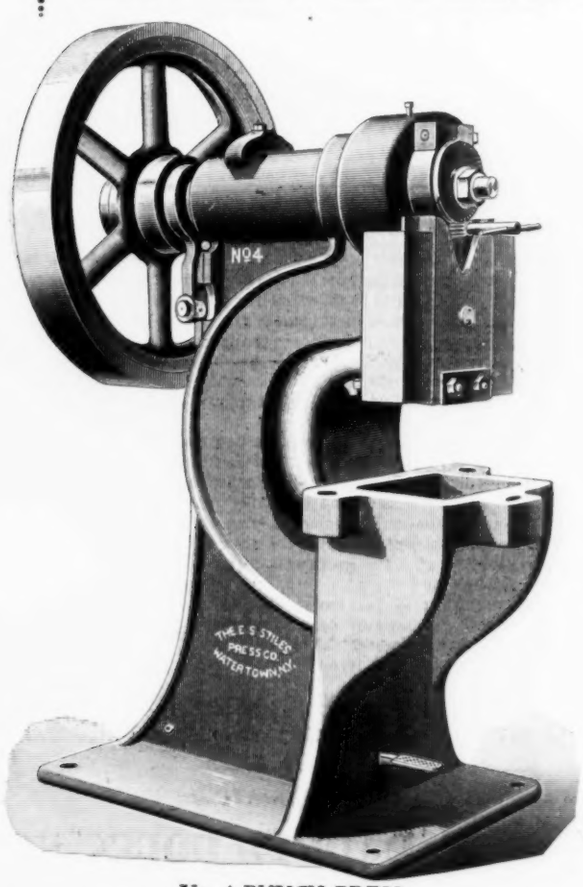

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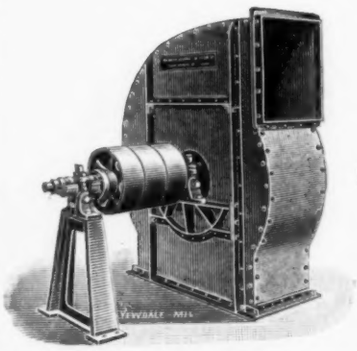

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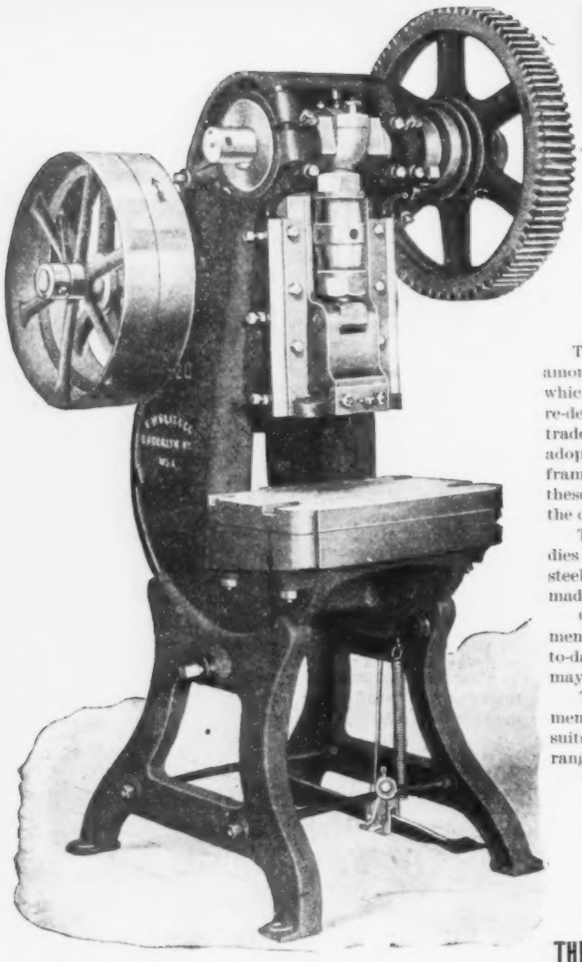

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There is probably no type of power press that has met with such general favor among manufacturers of sheet metal goods as the line of inclinable presses illustrated, which we designate by the numbers 18 to 21. This line of presses has been recently re-designed, embodying all the latest and best ideas in press construction known to the trade. Experts in press construction will at once appreciate the straight line principle adopted, which not only produces a graceful appearance, but also a much more rigid frame, resulting in greater strength with the same amount of metal. The weight of these presses has also been increased, making a much greater increase in strength over the old pattern.

The slides and gibs are very long, thus insuring the best results and longest life for dies and tools usually operated in such presses. The shafts are of the best forged steel, of large proportions and well fitted. The slide connections in the larger sizes are made of forged steel, are bronze bushed, and practically unbreakable.

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The press frame is so constructed that feeding devices, gauges, and other attachments can be easily applied. It may also be easily inclined to any angle that best suits the operator. It is built in several sizes, both as fly-wheel and geared machine, ranging in weight from 300 to 6,500 lbs. Write for further particulars.

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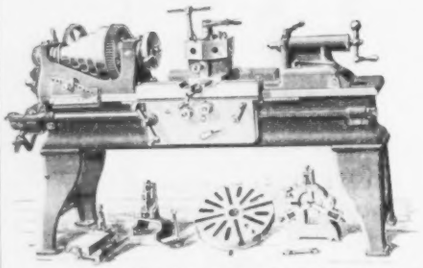

It has easy, quick and accurate adjustments of all feeds.
The range of feeds is very great.
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The Lathe in general is easy to operate.
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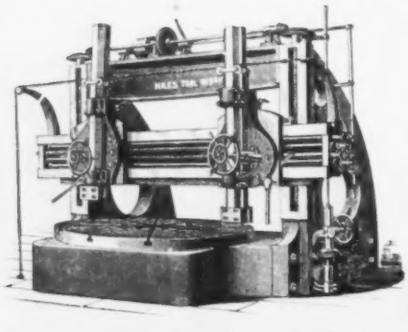

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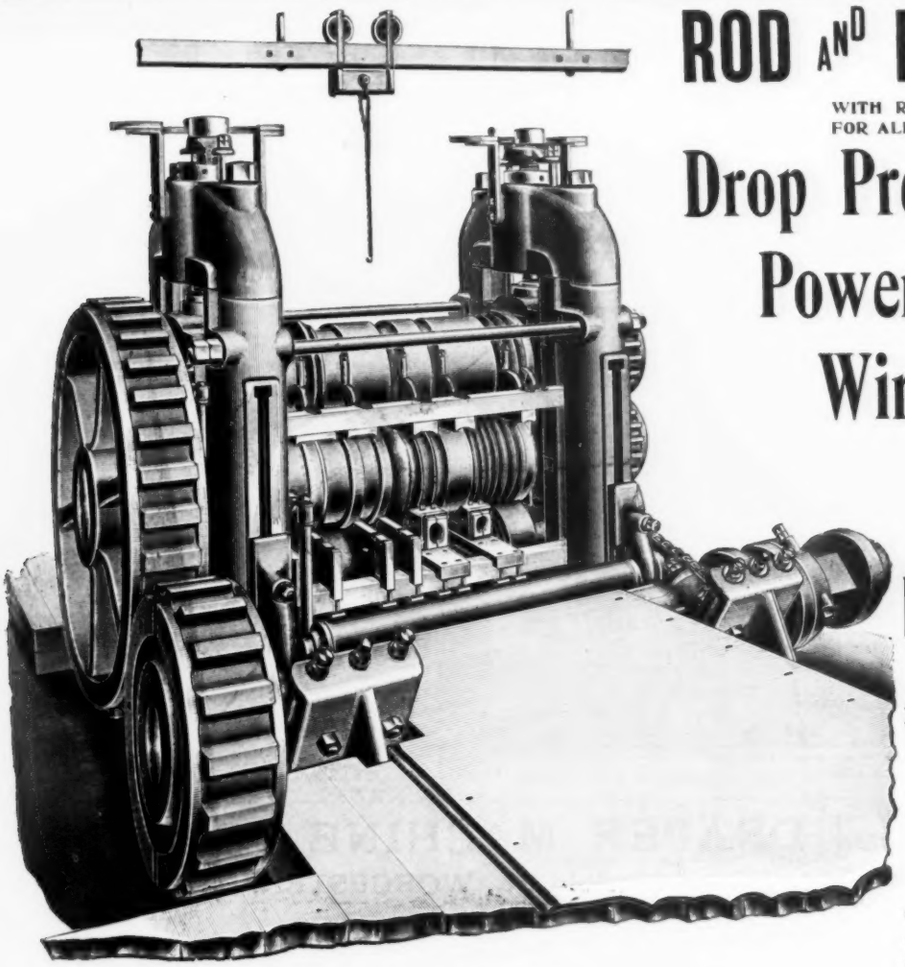

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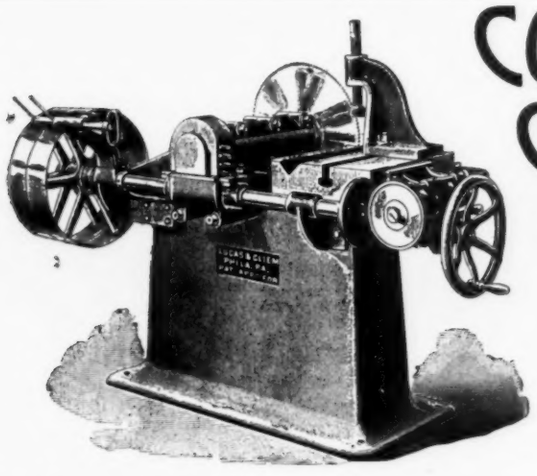

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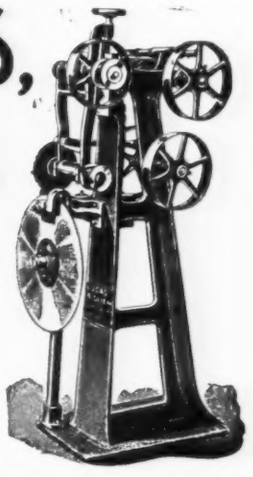

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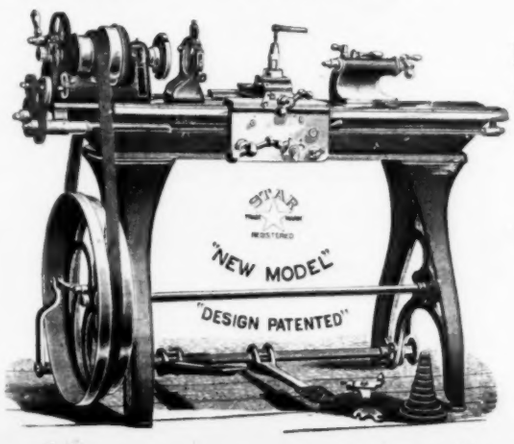

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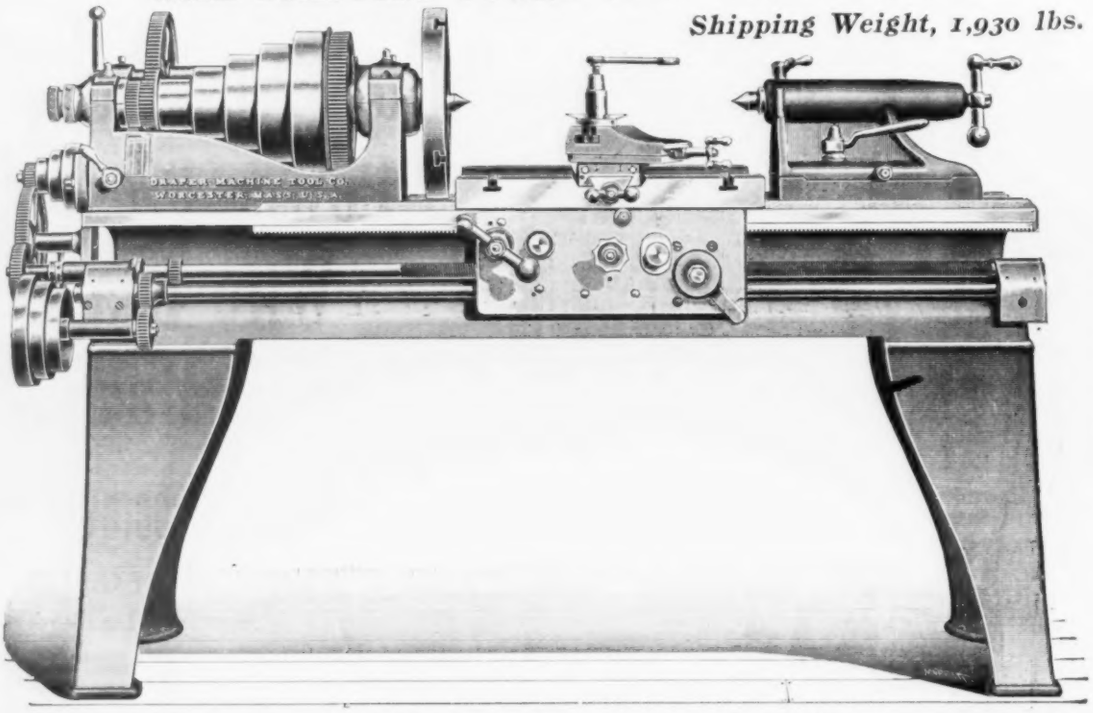

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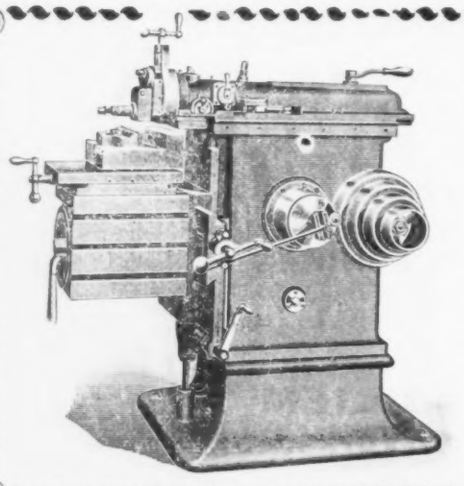

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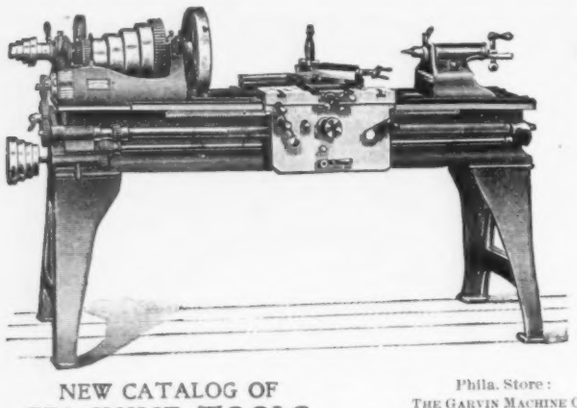

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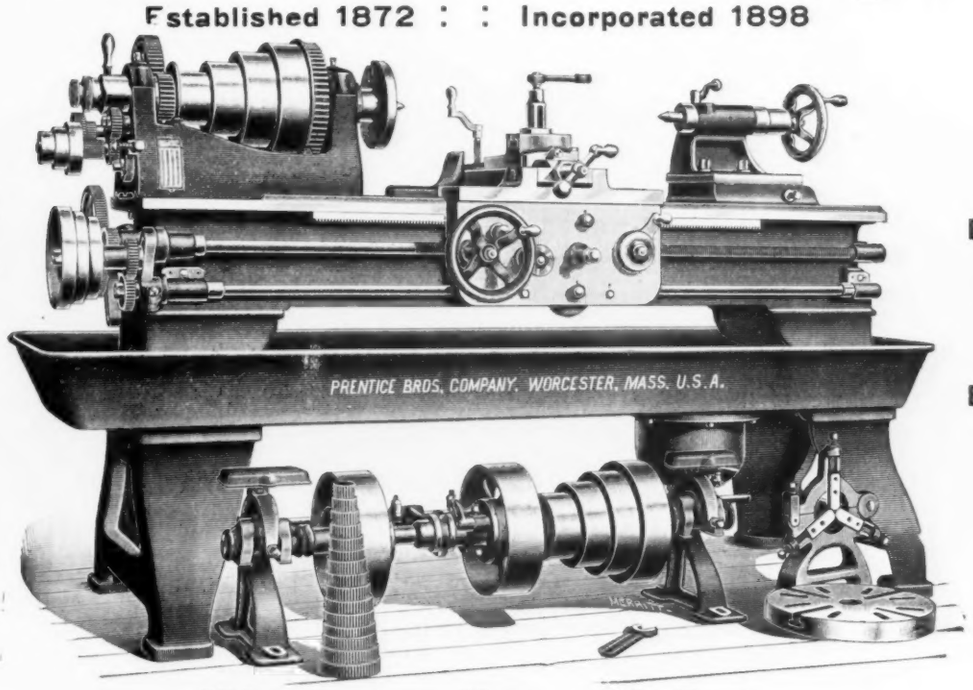

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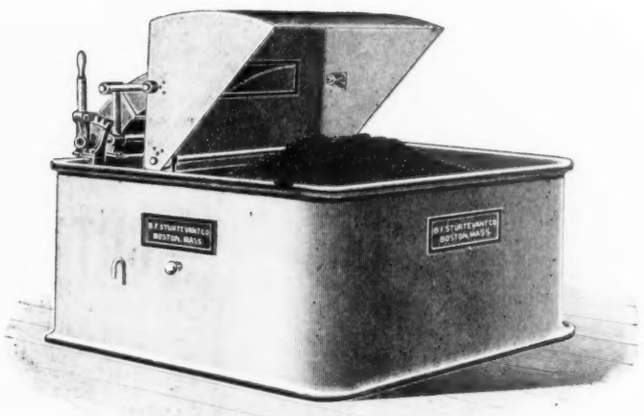

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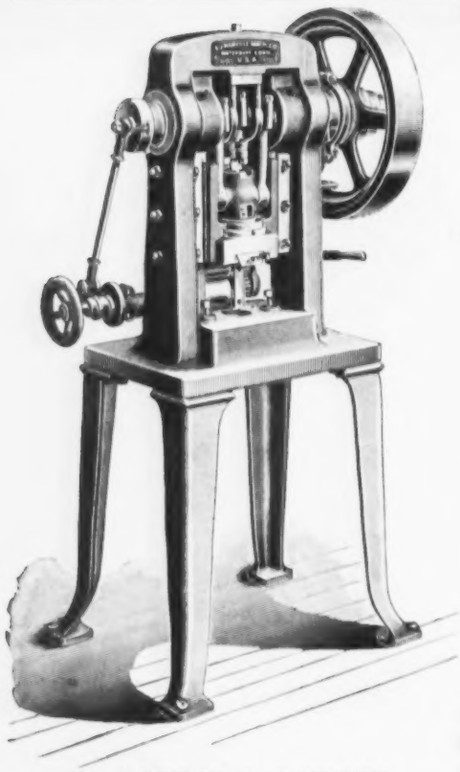

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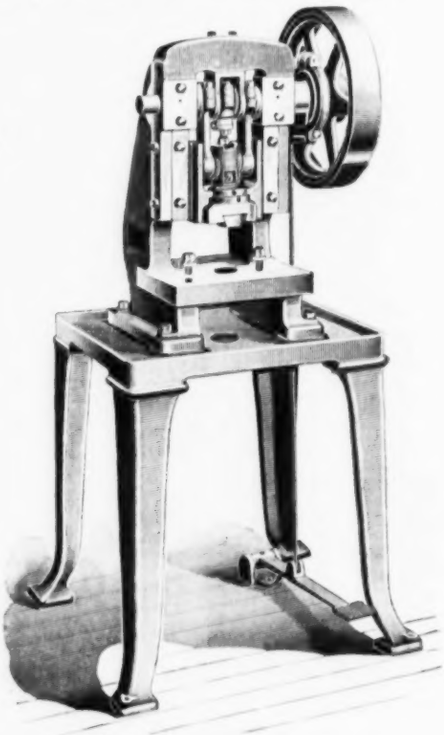

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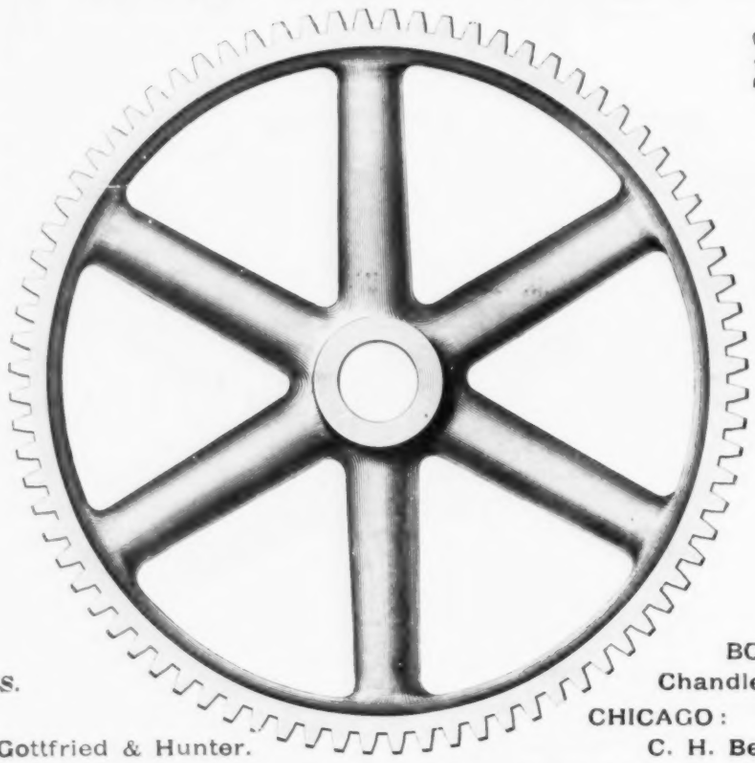

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Heavy, with triple-geared face-plate, 52 in. swing, 22-ft. bed, screw feed, compound rest, &c.

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Radial Drill made by Dietz, Gang & Co., drills to centre of 80 inches.

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1 100 ton Hydraulic Car Wheel Press.
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25 Horse Power Motor.
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Column Lathe, 54 in x 30 ft., solid Cast Base, 2 Heads. Splendid Tool.
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1 13 x 5 Plain Turret Lathe.
1 14 x 5 Putnam.
1 15 x 5 Bullard.
1 15 x 6 Wood & Light.
1 16 x 6 Fifield.
1 16 x 6 Star.
1 16 x 8 Porter.
1 17 x 8 Niles.
1 17 x 8 Muller.
1 18 x 8 Lodge & Davis.
1 18 x 7 Pond.
1 18 x 8 Putnam.
1 18 x 8 Lodge & Barker.
1 18 x 10 Steptoe-McFarlan.
1 20 x 8 Pond.
1 25 x 18 Leonard.
1 24 x 16 Sellers.
1 26 x 20 Pond.

PLANERS.
1 17 x 17 x 4 Putnam.
1 30 x 30 x 8 New Haven.

DRILLS.
1 26 in. Barnes Drill.
1 28 in. National Drill.
1 5 ft. Niles Half Universal Radial Drill.
1 Wall Radial Drill.

SHAPERS.
1 15 in. Betts Traveling Head.

SCREW MACHS.
1 ⅞ Screw Machine.
1 No. 3 Pratt & Whitney, Friction Head.
1 No. 3 Pratt & Whitney, Plain Head.
1 Davis & Egan Hub Machine.

MISCEL.
1 Garvin Hand Milling Machine.
1 1⅛ in. Pratt & Whitney Cutting-off Machine.
1 Newton Keyseater.
1 Valve Milling Machine.
1 5 in. Cutting-off Machine.
1 15 x 5 Lodge & Davis Hand Lathe.
1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ⅞, 1¼, 1⅝ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in. Hand Lathes.
1½ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to The Davis & Egan M. T. Co.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.

15 Automatic Screw Machines, 35 Pratt & Whitney Screw and Chucking Machines and over 200 other tools.
Catalogue now ready.

A. B. PITKIN MACHINERY CO.,
PROVIDENCE, R. I.

FOR SALE.
Second-hand Machinery.

ENGINE LATHES.
2 84 in. x 18 ft. Wheel Lathe.
1 54 in. x 22 ft. Pond Lathe, Triple B. G.
2 26 in. x 14 ft. Fitchburg C. R.
2 26 in. x 40 in. x 10 ft. Gap Turning Lathe.
4 20 in. x 8 to 10 ft. Engine Lathes.
25 18 in. x 6 to 10 ft. Engine Lathes.
3 14 in., 15 in. and 16 in. Lathes, various makes.

PLANERS.
2 40 in. x 36 in. x 8 ft. Old Style.
2 36 in. x 36 in. x 9 ft. New Haven.
1 30 x 30 x 10 Putnam.
1 24 x 24 x 6 Whitcomb.
1 24 x 24 x 5 Pond.
2 16 x 16 x 4 Hendey.

SHAPERS
1 26 in. Hendey.
1 15 in. "
1 12 in. "
1 20 in. G. & E.
1 14 in. Putnam Traveling Head.

MILLING MACHS.
1 No. 4 Cincinnati Univ.
1 No. 2 " Plain.
1 No. 2 Garvin Plain.
1 No. 13 B. & S. Plain.
2 No. 12 B. & S. Plain.
2 Ames Lincoln.
1 No. 3 P. & W. Lincoln.

DRILLS.
1 40 in. Bickford.
1 28 in. Barnes.
1 26 in. Kirkhoff.
1 25 in. Barnes.

MISCELLANEOUS.
1 54 in. Bement Boring and Turning Mill.
1 32 in. Bement Slotter.
1 25 lb. Bradley Helve Hammer.
1 80 lb. Bradley Helve Hammer.
1 50 lb. Bradley Upright Cushioned Hammer.
1 No. 2 Williams & White Bulldozer.
1 Davis & Egan Hub Machine.
1 Davis & Egan Screw Machine, 2⅝ in. wire feed.
1 44 in. Wheel Borer.

Also complete line of improved new machine tools. Write us for anything you want.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

LOCOMOTIVES.

One 25 Tons Standard Gauge Switcher with slope back Tender. Cylinders 16 in. x 22 in. Six 48 in. drivers. Fine order.

One 7½ Tons Standard Gauge Porter Saddle Tank. Cylinders 7 in. x 12 in. Four 26 in. drivers. Same as new.

One 20 Tons 36 in. Gauge Porter Saddle Tank. Cylinders 12 in. x 16 in. Six 34 in. drivers. Fine order.

THOMAS P. CONARD,

119 So. Fourth St., Philadelphia, Pa.

FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
94 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " "
10 Frisbie Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 8 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
12-08½ x 10½ x 10 Compound Worthington Pump.
10-16 x 10½ x 10 " " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
12 B'way, N. Y. City.

Second-hand Machinery.

1 Bement-Miles Hydraulic Riveter.
8 ft. gap, with pump, accumulator, punches, dies, etc., complete.
1 Set Power Bending Rolls, 9 ft.
1 Multiple Punch. Long & Allstatter.
43 in. between housings, spacing table.
2 Punches 22 in throat.
1 Shear. 33 in. throat.
1 Punch. 25 in. throat.
1 No. 4 Root's Positive Blast Blower.
1 Complete tin can factory equipment, with 60 machines.

READE & BOWLER,
216-217 American Trust Building,
CLEVELAND, O.

Machine Shop
FOR SALE.

Tools used in Piano Factory and will be sold in lots to suit: all in first-class shape and condition and comprising principally the following:

2 Brainard Small Hand Milling Machines.
1 Brainard No. 5 Standard Milling Machine, with Vise and Index Centres.
3 No. 5 Jones & Lamson Screw Machines, wire feed, capacity to ½ inch.
1 No. 5 Horton Toggle Single Action Press, 6000 lbs.
1 Each No. 0, 1, 2, Howard Single Action Press.
1 Perkins Rack Cutting Machine, 30 in. feed; small single and double spindle Threading and Tapping Machines to 5-16 in.; Emery Grinders; 10 in. to 16 in. Special Lathes and 13 in. x 5 ft. Blaisdell Engine Lathes.

Correspondence solicited. Address for particulars.

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CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 ft. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

FOR SALE.

(7) 36 in. and one standard gauge Locomotives.
(1) Rail and one Billet Shear, with engines attached.
(1) 13 in. Lever Shear.
(1) Rotary Shear.
(1) 80 H. P. Locomotive Boiler.
(1) 80 H. P. Horizontal Tubular Boiler.
Lot Wood Working Machinery.

Send for stock list.

THOMAS CARLIN'S SONS
ALLEGHENY, PA.

Second-Hand Machinery.

Engine Lathes.

13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bogart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines

No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.

16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 40 ft., 8 heads.

Shapers.

9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.

6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.

Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller, P. & W.

Miscellaneous.

24 in. Lead Lap, Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,

136-138 Liberty St., New York City.

Second-hand Machinery.

Screw Machines.

2 No. 1 Pratt & Whitney, wire feed.
No. 1 Prentiss, wire feed.
No. 1 Garvin, wire feed.
No. 2 Prentiss, wire feed.
No. 3 Warner & Swasey, back geared, wire feed.
No. 2½ Garvin, back geared, eight hole turret.
No. 3 Garvin.
No. 4 Bardons & Oliver, back geared, wire feed, power feed.
No. 6 Warner & Swasey, back geared, wire feed.
2 8X Jones & Lamson.
No. 4 Windsor, back geared, power feed, wire feed.

Milling Machines.

3 No. 1 Cincinnati, plain.
No. 2 Brown & Sharpe, plain, '98 pattern.
No. 1 Garvin Universal.
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No. 5 Becker, Vertical, shop worn only.
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No. 1 Prentiss Hand Miller, with arm.
22 in. x 22 in. x 4 ft. 6 in. Ingersoll, slab miller.

Lathes.

12 in. x 5 ft. Silk, compound rest, turret on bed.
14 in. x 5 ft. Flather, turret on bed.
2 14 in. x 6 ft. Bradford, fine condition.
4 14 in. x 6 ft. Flather, good order.
3 16 in. x 6 ft. Flather, good order.
16 in. x 6 ft. Fitchburg, compound rest.
24 in. x 10 ft. Fifield, shop worn.
24 in. x 12 ft. Fish.
30 in. x 22 ft. Lodge & Shipley.
36 in. x 17 ft. Powell.
42 in. x 19 ft., heavy pattern, second-hand.

Planers.

36 in. new, all lengths of bed, delivery in April.
7 ft. x 7 ft. x 18 ft. second-hand, good order.

Steam Hammers.

600 lb. Morgan, in good order.
1150 lb. " " " "

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SECOND-HAND MACHINERY FOR SALE CHEAP.

One 14x30 Hor. Slide Valve Engine, 85 H. P.	$225
One 9x18 " " " " 25 H. P.	125
One 65 H. P. Hor. Tubular Boiler, complete.	225
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One 40 " " " " "	200
One 12" Double Rocking Scrap Shear, - -	125
6", 5", 4", Section Steam Pumps, each -	100

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14 Foot Bending Rolls.

Bement's style. Latest pattern, hinged housing, friction pulleys, weight 50,000 lbs. Entirely new. Immediate delivery.

J. J. McCabe,
14 Dey St., New York.

We Have Just Secured the Following Machinery at Arlington, New Jersey, Which Will Be Sold Low for Cash Before Removal.

ENGINE LATHES.
36 x 13 New Haven, C. R., P. C. F.
30 x 15 New Haven, C. R., P. C. F.
28 x 11 New Haven, C. R., P. C. F.
26 x 11 Plain turning.
25 x 30 Sellers shafting.
22 x 12 New Haven, C. R., P. C. F.
18 x 11 New Haven.
18 x 6 New Haven.
15 x 6 Lathe & Morse, R. & F.
13 x 5 Ames, R. & F.

PLANERS
60 x 60 x 11 Bement.
32 x 32 x 8 New Haven.
25 x 25 x 4 L. W. Pond.

DRILLS
48 in. New Haven, B.G., P.F.
28 in. ditto.
4 ft. Arm, Betts radial.
Thorne Portable.

SHAPERS.
13 in. Warren trav. bd. crank.
12 in. Hendey friction.

WOOD WORKING TOOLS.
25 x 16 Pattern makers' lathe.
20 x 7 Pattern makers' lathe.
30 in. Fay band saw.
24 in. Pryable surface planer.
36 x 48 rip saw table.
Wood boring machine.

MISCELLANEOUS.
4 in. bar 6 ft. table Betts horiz. boring machine.
11 in. Lowell slotter, all feeds.
75 lb. Bradley helve hammer.
2 in. Bolt cutter.
3 in. Whiton bench centering machine.
Washburn double emery grinder.
8 x 12 Beckett slide valve engine.
10 x 15 Beckett horiz. piston valve engine
2 Horizontal boilers.
1 vertical boiler.
3 iron tumbling barrels.
1 No. 6 Sturtevant blower.
2 No. 3 " "
1 each 5 and 15 ton cupolas
1 6 ton Yale & Towne trav. crane.
1 5 ton hand crane.
1 4 " "
1 3 " "
1 large wood crane.
8 Harrington chain hoists.
1 shaft straightener.
12 bench vises.
Also shafting, hangers, pulleys, belting and tool room consisting of drills, taps, reamers, etc.

We also have a large stock of new and other second-hand tools and are in a position to make quick deliveries and low prices. Prices and full particulars on application.

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115 Liberty Street, New York.
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ROLLING MILL MACHINERY FOR SALE.

1 3-high Plate Mill with extra rolls.
1 24-in. Puddle Mill with extra rolls.
9 Double Puddle Furnaces.
1 Guillotine Shear, 87 in. knives.
1 Alligator Shear, 27 in. jaw, will cut 2 in. by 12 in. steel slabs, or 5 in. axles.
1 Rotary Shear; will shear ½ in. plates.
4 Muck Bar and Bar Iron Shears.
1 Large Steam Hammer.
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1 Rotary Squeezer with engine, 48 in. drum.

All the above machinery is in good condition and will be sold separately. Address

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File Factory
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On Saturday, April 1, 1899, the plant of the late McClellan File Co. will be sold at the Saginaw County Court House, by Circuit Court Commissioner, to satisfy mortgages about one-third the value of the plant, which will be sold entire comprising real estate, buildings and all machinery.

The factory has a capacity of 500 dozen files per day, and is one of the most thoroughly equipped file factories in the country.

Plenty of cheap fuel. An elegant opportunity on a small capital to manufacture files for the trade, or to operate it as a recutting factory. For further particulars address

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For Mortgagees.

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One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

FOR SALE.

At great sacrifice, by order of Court to satisfy a mortgage, about 9,000 acres of land rich in ***Iron Ore, Manganese, Clays, Ochres, Umber, Sand, Building Stone, Hydraulic Cement Rocks, Limestones, Marl, Lime, Fine Farming Lands, Forests and Water Power*** Good railroad facilities by two competitive roads. Cheap coal and coke. Apply for full report, analyses, maps, price, &c. to J Stewart Walker, Court's Agt., Lynchburg, Va

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To buy a second-hand
AIR DRILL.
ST. CLOUD IRON WORKS, St. Cloud, Minn.

SECOND-HAND
Metal-Working Machinery
At Bargain Prices.

Lathes.
One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.
32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.
10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.
9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14-ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N. Y. City.
Branches at Chicago and Pittsburg.

ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

For Immediate Delivery.

Twelve 10 in. Foot Power Engine Lathes.
Twelve 10 in. Power Engine Lathes
Twelve 12 in. x 5 ft. Engine Lathes.
Twelve 14 in. x 6 ft. Engine Lathes.
Six 17 in. x 6 ft. Engine Lathes.
Six 17 in. x 8 ft. Engine Lathes.

These Lathes are our own make and guaranteed first-class in every particular. Price low and can ship on receipt of order. We also build 3 in. and 4½ in. Cutting off Machines, Keyseaters and Upright Drills. Send for photographs and catalogue.

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ROCHESTER, N. Y.

FOR SALE.

1 32 in. x 108 in. Plate Mill, Roughing Rolls 2[illegible] in. x 84 in.; live tables and Vertical Table Engines.
1 Pair 36 in. x 40 in. Horizontal Reversing Engines.
1 110 in. Guillotine Plate Shear.
1 24 in. x 70 in. Blooming Mill, with 28 in. x 42 in. Reversing Engines, with gearing, tables and table engines.
1 18 in. 3-high Bar Mill.
1 20 in. 3-high Sheet Mill.
2 10 in. 3-high Guide Mills.
Engines, Shears, Punches and Cosgrove Straightener.
2 Hoisting Engines.
7 Boilers.
Engine Lathe, Roll Lathe, Planer Drill Press and Blowers.
1 10 ton Standard Gauge Locomotive Crane.
Supply and Hydraulic Pumps and Cranes.
A Large lot of other machinery such as used in large steel works.

W. J. CARLIN,
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FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. At order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

17 pairs Alligator and Rotary Shears cutting from one inch to six inch cold Steel Axles. Can be seen at Catasauqua, Pa.

Apply
WM. ECKBOLDS' SONS,
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For Quick Delivery.

1 Shear with Engine 126 inch, used.
1 Roll for straightening light plates, used.
1 Roll 40 inch for sheets, new.
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SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, Nos. ½, 3, 4, 5 and 7.
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One Fisbe Lucop Mill.
Vertical Engines, 6¾ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $250 each. Numerous machines not mentioned for want of space.

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SECOND-HAND
Steam Power Hammers
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Power Presses
FOR SALE.
BEAUDRY & CO.,
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Second-hand Tools.

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3 in. x 48 in. Hand Bending Rolls.
No. 0 Stiles & Parker Fowler Press.
No. 1 " " " "
36 in. Gould & Eberhardt Spur Gear Cutter.
No. 1 Newton Plain Milling Machine.
No. 11 Brown & Sharpe Milling Machine.
48 in. Pulley Borer.
49 in. Putnam Slotter.
100 lb. Merrill Bros Air Cushioned Hammer.
80 lb. " " " " "
24 in. Hendey Shaper.
No. 10 Sturtevant Pressure Blower.
No. 8 " Monogram Blower.
48 in. Box Radial Drill.
24 x 24 x 5 ft. Planer.
2 in. Acme Bolt Cutter.
18 in. Blaisdell Drill Press.
400 lb. Steam Hammer.
9 in. Star Foot Lathe.
Engine and Turret Lathes.

Henry A. Hitner's Sons,

Wholesale Scrap Iron & Metal Dealers, Riggers and Wreckers.

We are always in the market to buy and dismantle Iron Buildings, Bridges, Abandoned Railroads, Rolling Mills, Blast Furnaces, Ruins of Fires and all Structures of this character.

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CHEAP.

Cameron Pumps.
Centrifugal Pumps.
Root Blower No. 2.
Large Sturtevant Blast Wheels.
Exhaust Fan, Ventilating Fans.
Guild & Garrison Double Vacuum Pump.

Above all in **perfect condition,** used only **two weeks** and will be sold **very low.**

VARIETY MACHINE CO.,
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FOR SALE.

500 up-to-date 98 wheels in lots of 25 or more. Bargain for spot cash buyers.

Address

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FOR SALE.

Four fly wheels, each 25 feet in diameter, weighing 42 tons each, built in 12 segments and two centers, with rims turned and faced. We built these wheels for our own tin mills, and after a few months' use of them replaced them with heavier wheels. Will be sold low.

MACKINTOSH, HEMPHILL & CO.,
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See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

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Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
Care *The Iron Age*, 805 Fisher Bldg., Chicago.

NAIL MACHINES For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

FOR SALE.

Two Blast Furnace Blowing Engines.

MODERN DESIGN,
GOOD MAKE,
BUT LITTLE USED,
IN GOOD CONDITION.

84 in. Blast Cylinders, 4 ft. Stroke.
40 in. Steam Cylinders.

PRICES VERY ATTRACTIVE.

Inquire of

H. W. ALLISON, Treas.,
Allentown, Pa.

FOR SALE.

1 200 H. P. Wheelock Engine.
1 60 H. P. Armington & Simms Engine.

A large lot of new and second-hand Iron and Wood Working Machinery on hand. Do not fail to write us if you want to buy or sell.

THE THOMAS & LOWE MACHINERY CO.,
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FOR SALE

Large Foundry and Machine Shop plant in Chicago. Foundry fully equipped. Machine shop partially. Plant splendidly located. Ample grounds and fine railroad switching. For sale or rent. Address

"O. C.,"
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18 H. P. Globe Gasoline Engine in first-class order.

WILSON BROS., Easton, Pa.

Second-Hand Equipment FOR SALE.

2 12 in. Condensers, made by L. Schutte & Co.
2 12 in. Injectors, Korting's patent, made by L. Schutte & Co.
1 No. 2 Portable Drill, made by Thorne & De Haven.
1 No. 4 Steam Rock Drill, made by Vulcan Iron Works.
6 Planer or Shaper Chucks or Vises.
1 Cylinder Boring Machine.
2 Twin Horizontal Steam Pumps, 6 in. suction, 10 in. discharge.
1 Riehle Bros. Railroad Track Scale.
25 Pair of Portable and Wagon Scales, 600 to 20,000 lbs. capacity.
30 Pair 30 in. Gauge Wheels and Axles.
10 Two Wheel Furnace Charging Buggies, new.
1 Lot of Standard Taps, Reamers and Twist Drills.
1 Testing Machine, made by Tinius Olsen & Co., 200,000 lbs. capacity.
2 10 in. 3 High Bar Mills with 312 extra rolls.
1 22 in. x 60 in. 2 and 3 High Plate Mill.
1 18 in. 2 High Bar Mill with 101 extra rolls.
1 21 in. 3 High Bar Mill, 75 extra rolls.
1 15 in. 3 High Bar Mill with 64 extra rolls.
1 18 in. 2 High Muck Mill, 13 extra rolls.
30 Single and Double Heating Puddle Furnaces, complete with all plates, boilers, stacks and all necessary fixtures.
100 Tons of Puddling and Heating Furnace Tongs and Tools.
Large quantity of Cinder Buggies and Carriages used around furnaces and roll trains.
500 Tons of Floor Plates, principally 2 x 4 x ¾ in.
6 Straightening Beds.
8 Roll Turning Lathes.
3 Squeezers.
1 Chaser Mill.
50 Machinist and Blacksmith Leg and Bench Vises.
35 Vertical and Horizontal Engines from 4 to 500 H. P.
8 Sturtevant Fans or Blowers from 5 in. to 30 in. blast opening.
1 Large Steam Vertical Straightening Machine.
3 Angle or Bar Straightening Machines.
12 Hand or Power Driven Radial Cranes from 2 to 10 tons capacity.
2 Power Driven Overhead Traveling Cranes made by Yale & Towne.
Large quantity Shafting, Pulleys, Hangers and Steam Pipe.
100 Wrought Iron Plates, 11 ft. 3 in. x 39 in. x ¼ in.
100 " " " 11 ft. 3 in. x 39 in. x ⅜ in.
24 " " " 10 ft. x 54 in. x ½ in.
33 lengths 10 in. Cast Iron Water Pipe, good as new.

We can make immediate shipment of all kinds of machinery or equipment for rolling mills or blast furnaces.

C. R. Baird & Co.,

PIG IRON,

PHILADELPHIA.

Tack Machines For Sale.

Two Machines, 6 to 24 oz.
One Machine, 0 to 8 oz.
One Machine, 8 to 24 oz.
Also Shear for trimming stock.

Have been but little used; are as good as new.

ANDREW F. WEST,
Buffalo, N. Y.

FOR SALE.

Rolling Mill at Bristol, Pa., well equipped for making Bars, Band and Hoop Iron.

RODMAN WISTER,
Trustee,
672 Bullitt Bldg., Philadelphia, Pa.

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for *immediate operation,* consisting of *complete Skelp Mill,*

6 Double puddling furnaces,
3 Heating furnaces,
3 Trains of rolls; also
2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

The Blast Furnace with this property will be dismantled. The Blowing Engines, Pumps, Dynamo, etc., are for sale.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

For particulars address the Secretary of The Board of Trade, Worcester, Mass.

INVESTIGATE.

Drop Presses.

One E. W. Bliss 800 lb. Automatic Board Drop, fitted with hand and foot treadle, no poppets, hammer and anvil dovetailed to hold dies, construction similar to Bliss Drop shown on page 242 of their new catalogue, in good order.

One E. W. Bliss 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, hammer and anvil dovetailed to take dies, similar to above description, in good order.

One Morrill Brothers 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, also steel uprights, has 6 ft. drop, with one extra hammer weighing 1,500 lbs., hammer and anvil fitted with dovetail to take dies, in good order.

Ready for Delivery May 1st, 1899.

One Arch Power Press with Dial Feed. Good Order.

One three spindle Lathe, 12 in. x 6 in. swing, 8 ft. bed, no countershaft. Good Order.

One Quint Drill, Turret Head. In A1 Order.

One Tapping Machine. In A1 Order.

One Automatic Milling, Drilling and Tapping Machine for finishing battery zincs. Can be adapted for other work of a similar character. In A1 Order.

One Semi-Universal Milling Machine, Mossberg Make. In A1 Order.

MOSSBERG & GRANVILLE MFG. CO.,
PROVIDENCE, R. I.

FOR SALE CHEAP.

12 1/8 in. Adt Riveters, practically new.
2 15 in. x 6 ft. Sebastian Lathes, compound rest and chucks.
1 20 in. x 12 ft. Putnam Lathe, compound rest.
1 20 in. x 12 ft. " " " rise and fall rest.

Write us for prices on these or any other machinery you may be interested in.

VONNEGUT HARDWARE CO.,
Indianapolis, Ind.

WANTED.

Second-hand Lathe, to swing 48 in. to 60 in. over ways and to take in 72 in. or more between centres. Address with complete description and price.

DILLEY FOUNDRY CO.,
Pine Bluff, Ark.

For Sale.

Tanks, all sizes.
Machinery of all kinds.

Sold, bought or exchanged.

WM. ECKBOLDS' SONS,
711 E. Girard Ave., Philadelphia.

PLANER
For Sale Cheap

Second-hand and in first-class condition. Made by PRATT & WHITNEY, 40 in. x 40 in. x 10 ft. Can be seen at the factory of

THE YALE & TOWNE MFG. CO.,
Stamford, Conn.

FOR SALE.

One 22 x 42 Wright Corliss Engine in very good condition.

CRANE CO.,
10 N. Jefferson St., Chicago, Ill.

BARGAINS.

24 x 24 x 6 ft. Planer, Aldrich.
32 x 32 x 10 ft. " "
36 x 36 x 8 ft. Planer, New Haven.
40 x 40 x 10 ft. " Pratt & Whitney.
12 x 5 ft. Engine Lathe, Young.
17 x 8 ft. " " Wright & Smith.
20 x 12 ft. " " L. W. Pond.
24 x 21 ft. " " New Haven.
33 x 20 ft. " "
54 x 11 ft. " "
84 in. Radial B.G.&S F'd, Betts Mch.Co.
No. 2 3-spindle Gang Drill, Garvin.
No. 2 Wire Feed Screw Machine; good as new; takes 1" Stock; Costilo.
No. 1½ Fowler Press, Stiles & Parker.

Lot of Screw Machines, Windsor make. Automatic Screw Machines, &c., at low prices.

Can give bargains in new and second-hand machine tools at all times.

GEO. E. AFFLECK,
109 Liberty St., New York.

FOR SALE.

A miscellaneous lot of iron buildings, not including sides or roof covering, as follows:

One building, 80 ft. span, 242 ft. long, 16 ft. high to under chord of truss; shed addition 20 ft wide.

One building 80 ft. wide (in two spans), 114 ft. long, 16 ft. high to bottom chord ventilators.

One building 120 ft. wide, 352 ft. long, with center posts. Ventilator 16 ft. to bottom chord.

One building 120 ft. wide, 124 ft. long, 20 ft. to bottom chord center posts

One building 65 ft. wide, 176 ft long, 37 ft. high to bottom chord.

One building 65 ft. wide, 106 feet long, 37 ft. to bottom chord.

One building 36 ft. wide, center span, 27 ft. high to bottom chord, with a 70 ft. lean-to on each side; total width of building 176 ft.; height of lean-to 12 ft. under chord; length of this building 198 ft.

One building like above, 260 ft. long.

Also 20 tubular 60 in. diameter 16 ft. long boilers, with independent stack to each, set in two batteries, with feed pumps, heaters, stokers, connections, etc.

Eight Galway boilers 84 in. diameter, 28 ft. long.

A miscellaneous lot of upright engines, both double and single cylinders, from 10 to 100 horse power.

Twelve Smythe producers with valves, cooling tubes, etc.

For further information address

WM. D. HARTUPEE, Chief Engineer,
Pittsburgh Plate Glass Co.,
Carnegie Bldg., Pittsburgh, Pa.

ROLLING MILL
For Sale or Lease.

The property known as the Seyfert Rolling Mills is offered for sale or lease.

This Mill is located on the Wilmington & Northern R. R., five miles from Reading, Pa., and is equipped for making Sheared Pipe Skelp, Sheet Iron, Plate Iron and Puddled Bars.

The property is in perfect condition and can be started up in 24 hours time. Is, without doubt, one of the best mills in the state; has always been a money-maker and should prove a very desirable and profitable investment to anyone desiring to go into the iron business.

This Mill would be indispensable to the Wrought Iron Pipe Trust now forming.

For terms or particulars, apply or address

SAM'L R. SEYFERT & BRO.,
Reading, Pa.

For Sale.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & Bodley Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 12 x 34 Brown Automatic Engine.
1 30 x 30 x 8 Whitcomb Planer.
1 50 in. Stevens Pulley Lathe.

WICKES BROS., Saginaw, Mich.

PITTSBURGH

SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

No. 8 Wood St.,

Pittsburgh, Pa.

We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

For Sale in Cleveland, Ohio.

AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery; good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

HERO STAMPING WORKS,

Room 407, Cuyahoga Bldg., Cleveland, O.

Locations for Industries.

The Chicago Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y.
Old Colony Building, Chicago, Ill.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

WIRE WANTED

Any one having Coarse Wire (Iron or Steel), odd lots, size from No. 3, wire gauge, to No. 16 long pieces, they would like to sell, write to

The Horace Lamb Wire Co.,
Northampton, Mass.

TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address

"H.,"
office of *The Iron Age*, 70 Kilby St., Boston, Mass.

Manufacturers

of Bicycle Sundries, Hardware Specialties, etc. desiring live representation throughout the **World** are requested to communicate with A1 New York City House by addressing

"T. M.," No. 32,
Care *The Iron Age*, New York.

LOUIS MESIER, Auctioneer.

Executor's Sale to Close an Estate

OF

Valuable Coal, Timber & Farming Lands

In Somerset County, Pa.

6,000 ACRES MORE OR LESS.

ADRIAN H. MULLER & SON

will sell at auction on

TUESDAY, APRIL 4th, 1899,

At 12 o'clock noon, at the N. Y. Real-Estate Salesroom, No. 111 Broadway, New York City.

This property is about 2⅝ miles west of WEST SALISBURY STATION on the SALISBURY BRANCH, BALTIMORE AND OHIO R. R., which is a good shipping point; the Railroad having surveyed for an extension of their road to within ¾ mile of these lands, makes it easy of access. The Mutual Telegraph Co. run over the lands around the public roads.

THESE LANDS are underlaid with BITUMINOUS COAL, FIRECLAY, IRON ORE and LIMESTONE, and have a fair average of the several kinds of Timber grown in this section, viz.: WHITE OAK, RED OAK, HEMLOCK, ROCK OAK, ASH, POPLAR, CHERRY, BLACK BIRCH, CHESTNUT, etc.

After the timber is cleared off, will make good farming and grazing lands, being well supplied with running streams.

THE ATTENTION OF COAL COS., IRON AND COAL MINERS, AND RAILROAD COS., ALSO CAPITALISTS, IS CALLED TO THE SALE OF THIS PROPERTY.

50 PER CENT. may remain on **BOND AND MORTGAGE** at 5 per cent. Interest for One Year or all cash if desired. **Reports of E. V. D'Anvilliers, Geologist and Mining Engineer, of Philadelphia,** and other particulars can be had at the **Auctioneers'** office, **24 Pine Street, N. Y. City.**

WANTED.

Jobs and Specials for SPOT. Send particulars.

BROWNE & MANSFIELD,
245 Broadway, New York.

SALESMEN WANTED

in every State in the Union who visit the manufacturers of Dynamos and Motors, Electrical Street Railways, Electrical Repair Shops, Electrical Supply Jobbers, to take our line of Insulation on Commission. Good live salesmen can add twelve to fifteen hundred dollars per year to their incomes. All necessary samples can be carried in pocket.

W. H. SILLS MICA CO.,
60, 62, 64 Michigan Ave., Chicago.

TYPEWRITERS.

We will exchange typewriters, all guaranteed, and send subject to trial, in exchange for merchandise. What will you offer?

BROWNE & MANSFIELD, 245 Broadway, New York.

Blast Furnaces For Sale.

I have for sale five blast furnaces, one in Virginia, one in Pennsylvania, one in Tennessee and two in Alabama. Some of these furnaces own their own coal, coke ovens and ore and could be started up very quickly. They can be sold **far below the original cost.** Three of these are strictly modern furnaces.

For particulars address

J. H. HILLMAN,
No. 8 Wood Street, Pittsburgh, Pa.

FLY WHEELS.

One 11 foot, in halves, 10 tons weight. One 8½ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

AMERICAN RAILWAY SUPPLY COMPANY,

Manufacturers of

Baggage, Hotel and Time Checks, Metal Figures and Letters and everything in the line of Stamped Metal Work.

24 PARK PLACE, NEW YORK.

FINE LOCATIONS

For ELEVATORS and FACTORIES on the Belt Ry. of Chicago.

Address B. THOMAS, Pres. & Gen'l Mgr.,
Room 13, DEARBORN STATION, CHICAGO.

FOR SALE.

48-lb. T Rails.

All or any portion of 173 tons of first quality new rails of standard section. Immediate delivery. Special price.

Address,
WM. WHARTON, Jr. & CO., Incorp.,
25th St. & Washington Ave., Philada., Pa.
Or, HARRINGTON, ROBINSON & CO.,
276 Franklin St., Boston, Mass.

AGENCIES WANTED.

Well known first-class commission agents, established in Brussels, desire agency for articles likely to have market on the Continent. Engineering, electrical or hardware trade preferred. Best references. Apply to

"V. H. B., 1899,"
Care *The Iron Age*, New York.

NO. 32 CLIFF ST.,

four story brick building, to let from May 1; suitable for the iron business.

CHARLES S. BROWN, 59 Liberty St., N. Y.

MANUFACTURERS.

GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

Address, "M. M. N.,"
office of *The Iron Age*, New York

FOR SALE.

An old established jobbing and retail stock of hardware, in a prosperous Western city of 20,000 people and a railroad center. Established in 1866 and the owner now wishes to retire, after 33 years' continuous and prosperous business. Will be sold cheap. No trade. Address "No. 117," care *The Iron Age*, Commercial Building, St. Louis.

Of Interest to Capitalists.

A competent mechanical engineer or machinery salesman with capital to take an interest in a live concern with a good line of standard tools who desire to add another large line. A splendid opportunity. Address

"STANDARD TOOLS,"
22 Pickering Bldg., Cincinnati, Ohio.

EUGENE V. N. BISSELL, Auctioneer.

E. BISSELL & CO.,

Successors to
HAYDOCK & BISSELL
WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

PHILADELPHIA SALES AGENCY.

FITCHBURG MACHINE WORKS.
P. BLAISDELL & CO.
BRADFORD MILL CO.
BICKFORD DRILL & TOOL CO.
CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second-Hand Machinery.

JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia.

FOR SALE.

Quantity of old Machinery, Shafting, Pulleys, Cupolas, Converters, Oven Cars, Trucks, etc. For particulars address

AMERICAN STEEL CASTING CO.,
Chester, Pa.

NOTICE.
MACHINE TOOL BUILDERS.

Bids wanted to build Automatic Screw Machines; same to be completed July 1st. Cash.

Address "DAMAN,"
care *The Iron Age*, New York.

WANTED.

A Tabor Molding Machine to take a flask about 12 inches wide by 2 ft. long. Address

"B. C.," Box 316,
care *The Iron Age*, New York.

FOR SALE.

The following boiler iron, high pressure, round gas tanks. Good as new:

2 tanks 12 ft. by 2 ft. 6 ins.
7 " 10 ft. by 2 ft. 8 ins.
6 " 10 ft. by 2 ft. 6 ins.
1 " 10 ft. by 3 ft.

RICHARDSON & COMPANY, Inc.,
Pittsburgh, Pa.

NOTICE.

We will in a few days be prepared to make all kinds of Dies, Tools and Patterns for Builders and General Hardware and Novelties, also Metal Punching, Stamping and Manufacturing anything in sheet or cast metal. Years of experience as Supt. of large works at your service; want to figure with you now.

Address "G. BROS.,"
care *The Iron Age*, New York.

AN ENGLISH HOUSE

which could command a large trade is desirous of negotiating for American Agency for United Kingdom for manufacturers' Steel Plates, Angles and Shipbuilding material generally. To pass usual British tests. Apply in confidence "BOX 175/21," London. Office of *The Ironmonger*, 42 Cannon Street.

BAKER BLOWER.

No. 5½ Baker Blower in good order, now at Robert Wetherill & Co.'s Shops, Chester, Pa. Replaced by two No. 5 Root's Blowers. Apply to

P. H. and F. M. ROOT & CO.,
160 Liberty Street, New York.

For Sale, Cheap.

A new steam crane for standard gauge track, self propelling, capable of lifting easily ten tons at any point within a radius of 16 feet without the use of track clamps. Materials and workmanship first-class in every respect. Address

THE ALLENTOWN ROLLING MILLS,
Allentown, Pa.

Hardware Store for Sale.

Within 10 miles of Boston; old established store, well stocked with builders' and shelf hardware. Wide front, with rear entrance. Good opportunity for sale and repairs Bicycles. Immediate sale as owner is moving away. Address

"HARDWARE,"
Box 167, Boston, Mass.

For Rent, with Heat and Power.

A three-story brick factory, 40 x 60, on side track. Light on all sides. Five railways and two rivers. Town of 15,000. Address

THE MARIETTA PAINT & COLOR CO.,
Marietta, Ohio.

Scrap Iron
WANTED.

CASH PAID FOR

Wrought Scrap Iron, Cast Scrap Iron and Old Horse Shoes.

ADDRESS

D. M. OSBORNE & CO.

Manufacturers Farm Implements,

AUBURN, N. Y.

FOR SALE.

A valuable Manufacturing Plant. The building is 40 x 100 feet, two stories. Good Engine and Boiler and well equiped with valuable machinery and tools for manufacturing Vapor Stoves or other Iron products.

Satisfactory reason for selling.

Address A. MUNSON, MEDINA, OHIO.

FOR SALE.

100 to 125 tons 45 lb. Steel T Rails in good condition, but little used.

E. H. WILSON & CO.,
112 North Broad St.,
PHILADELPHIA.

SALESMEN!

Do you want a Side Line that will not conflict with your regular line?—Easy to sell—Good commission—Can carry samples in pocket—Sells principally in Lumber Regions. Samples free. Write for particulars and give references.

J. L. KEITH & SON,
OLDTOWN, ME.

BUSINESS OPPORTUNITY.

A practical young man wanted to invest in one-half interest in an old established manufacturing house in Northern Ohio. Object, aid in managing and sales. Good salary. Best of references. Address with reference,

"BUSINESS OPPORTUNITY,"
care *The Iron Age*,
312 Cuyahoga Building, Cleveland, O.

WANTED

Six spindle Turret Lathe about 18 in. by 6 ft., also No. 5 Geared Power Press. State condition and price.

PULLMAN SASH BALANCE CO.,
Rochester, N. Y.

Texas Shop Cheap

Well equipped foundry, boiler and machine shops suitable for engine and railroad work. Contain wheel press, planers and shapers; lathes 15 to 44 in. swing up to 26 ft. bed. One and one-half acres of land. Big lot of patrons and business good the year round. Reason for selling—disability and old age.

Address A. DEMARCE, Texarkana, Texas.

A Rare Bargain.

A double cylinder Hoe newspaper printing press, with two folders in fine order, for sale at a bargain.

WALSH'S SONS & CO.
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.

Telephone Call, 897 18th St.

Morton B. Smith,

243 FRONT ST., NEW YORK,

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.

Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 54 and 60 lb. first-class Relaying Steel Tee Rails with splices.
350 tons 35 lb. Relaying Steel Tee Rails with splices.
100 tons 48 lb. Relaying Steel Tee Rails with splices.
300 tons 60 lb. first class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section, 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.

Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

WM. H. PERRY CO.,
Providence, R. I.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.
253 BROADWAY, N. Y.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited.

C. BOTJER, 405 Newark St., Hoboken, N. J.

MICHIGAN COLLEGE OF MINES.

Supported by the State of Michigan. Practical work. Elective system. Special advantages for men of age and experience. For catalogues address

DR. M. E. WADSWORTH, President,
Houghton, Michigan.

Help Wanted.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

A leading DRAFTSMAN on crane work, also detail draftsman; none but first-class men need apply; state salary and experience. Address P. O. Box 1250, Pittsburgh, Pa.

FREE SAMPLES MAKE THE SALES of our Bar Belt Dressing; so well liked by manufacturers little risk in advancing full commission to trustworthy salesmen acquainted with the trade; give references for sample and details. Stephenson Mfg. Co., Albany, N. Y.

SALESMEN visiting the agricultural implement and hardware trade to sell as a side line the Fowler Sickle Grinder, Corundum Grit Scythe Stones and Specialties; liberal inducements given; write for particulars, stating what territory you cover. Taughannock Emery Wheel Company, Cortland, N. Y.

First-class SHIPPING CLERK for a stove manufacturing company wanted; none but experienced and with first-class references need apply. Address "Shipping Clerk," care *The Iron Age*, 22-24 Pickering Building, Cincinnati, Ohio.

SALESMAN for manufacturer of bridge and ship builders' tools; good salary and permanent position to the right man; give age and experience. Address "Ship Tools," care *The Iron Age*, New York.

METAL SALESMEN wanted by responsible concern dealing in stereotype, linotype, electrotype and babbitt metals, also copper compound; experienced man for New York City and also representatives for other territory; liberal commission. Address "Metal Salesman," care *The Iron Age*, New York.

DRAFTSMEN on mill and machine shop work wanted; state salary and experience. Address "Manganese," care *The Iron Age*, New York.

Practical man who understands manufacture of solder and mixed metals; state experience, references and salary expected. Address "Solder," care *The Iron Age*, New York.

A hard working practical SMELTER and REFINER who has had years of experience coupled with a thorough knowledge of up to date mixtures used in a brass foundry. No other need apply. Address "M. M. N.," care *The Iron Age*, New York.

First-class TRAVELING SALESMAN; reference; experience selling felt roofing, tar products and steel roofing; Southeastern States. Address "Roofing Manufacturer," Lock Box No. 2, Atlanta, Ga.

A competent HAMMERMAN for hammering wagon axles and doing other work in an axle shop. Address, with full particulars as to age, experience, pay, &c., Pacific Axle Company, 418 Mission street, San Francisco, Cal.

A first-class DRAFTSMAN; one familiar with rolling mill machinery, sugar mills and general transmission machinery; give age, experience and salary required. Address Farrel Foundry & Machine Company, Ansonia, Conn.

By large machine works in Germany, a thoroughly competent DESIGNER of large lathes, planers and large boring mills; applicants must be well acquainted with best American practice and must also be posted on the operation of these machines; knowledge of German not essential; give full particulars as to experience, age and salary expected. Address "Lathe Designer," care *The Iron Age*, New York.

Situations Wanted

Undisplayed Advertisements for Situations Wanted not exceeding twenty-five words Fifty cents each insertion. Additional words two cents each.

By Junior A. S. M. E., graduate, experience in shop, draftsman and designer, and as superintendent. Address Reid, Room 502, 35 Nassau street, New York City.

EXPERIENCED MAN in advertising methods would like charge of advertising work of some manufacturing or jobbing house; good references. Address "C. P.," care *The Iron Age*, The Cuyahoga, Cleveland, Ohio.

Blast furnace FOREMAN desires to change; capable of handling repairs and improvements; three years' Southern experience; good reference. Address "J. F. O.," 1603 Penn avenue, Pittsburgh, Pa.

BLAST FURNACE MANAGER: experienced in anthracite and coke; up in modern methods; six years in Virginia; also a chemist. Address "Manager," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

FOREMAN MOLDER, American, 35, is open for position; capable; experienced; best of references; either light or heavy work. Address "S. T. E.," care *The Iron Age*, New York.

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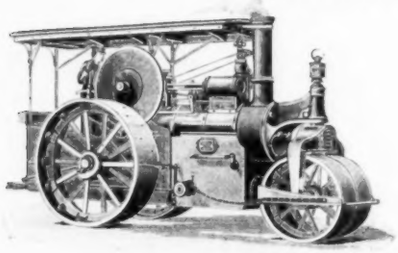

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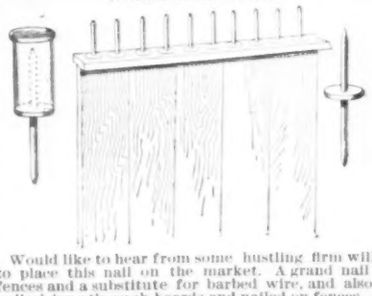

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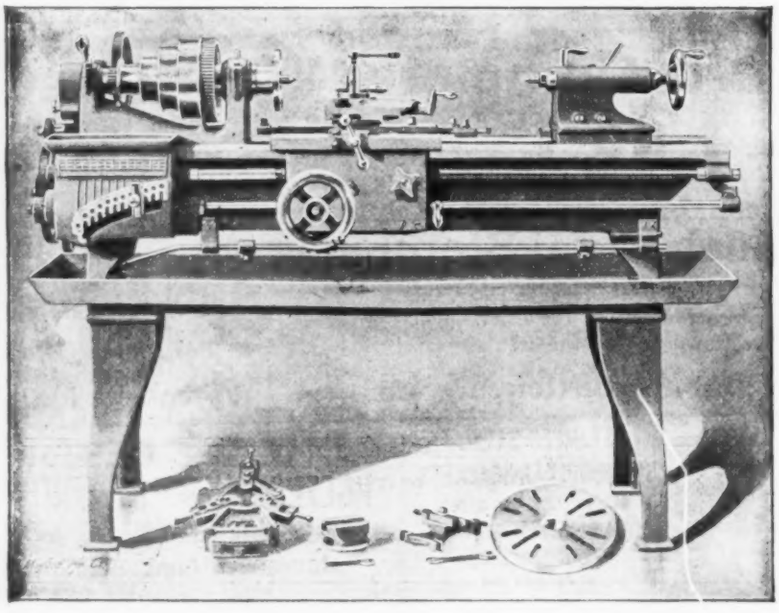

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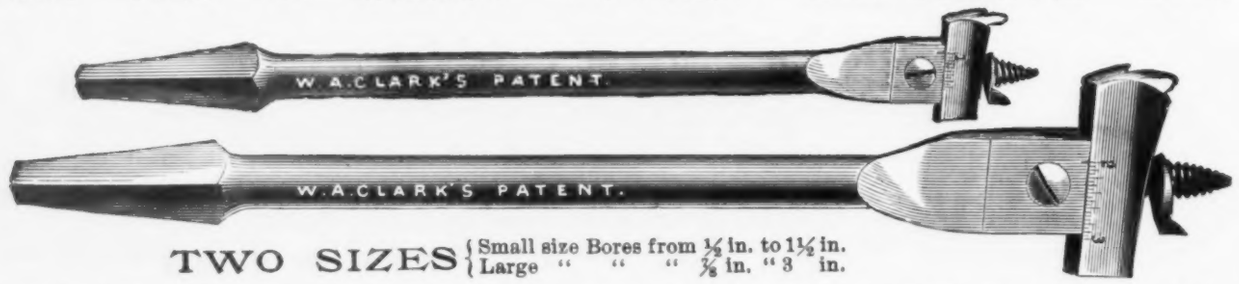

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The Donoghue Soldering Copper Handle is a good Handle. **TESTED TEN YEARS.**
Made by The Cleveland Rule & Handle Co.,
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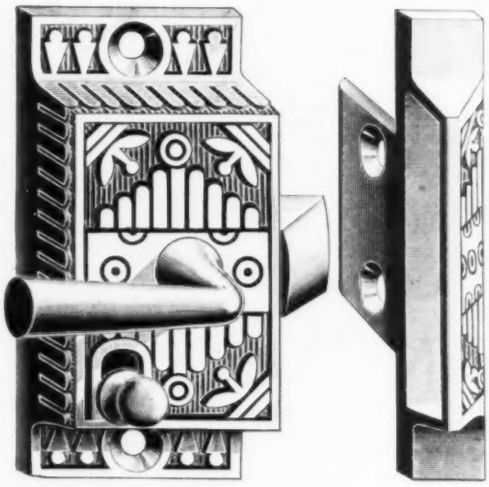

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for cleaning from Street and Railway curves, ice, snow and dirt. Handle 38 in. long with steel scraper end. Handle riveted to brush. Strongly made of extra heavy wire set in V shape.

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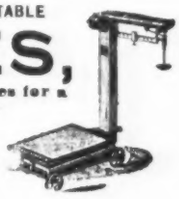

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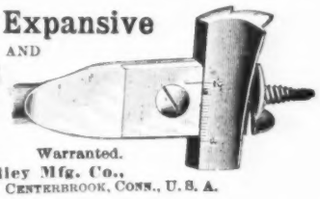

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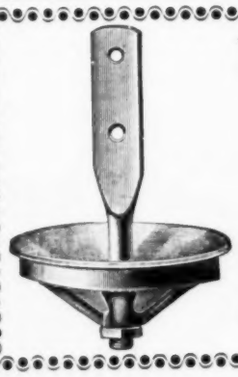

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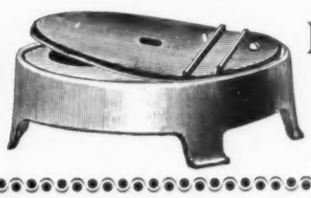
Only the very best leather and rubber are used in these goods and all are carefully and evenly fitted, making them the best of their kind.



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solid back dust transmitters in Wall, Desk and Cabinet Styles.

They are **Convenient, Durable** and the **best** of **talkers.**

A trial will convince **anyone** of their superiority on **either short** or **long** distance **work.**

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Manufactured by

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Wherever Saws are sold they take the lead.

ATKINS SEGMENT GROUND.

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IT'S A WINNER.

Don't try to give them any other saw when they ask for a Simonds Cross-Cut (Crescent Ground). It will react against you. If they want a "Simonds" they will get it—of you, if you're wise; of some one else, if you're—otherwise.

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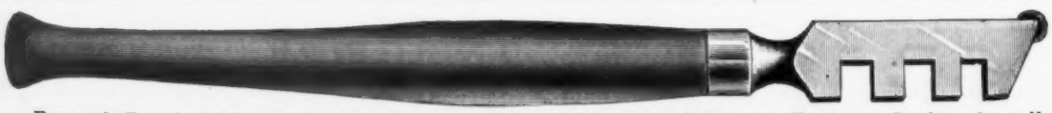

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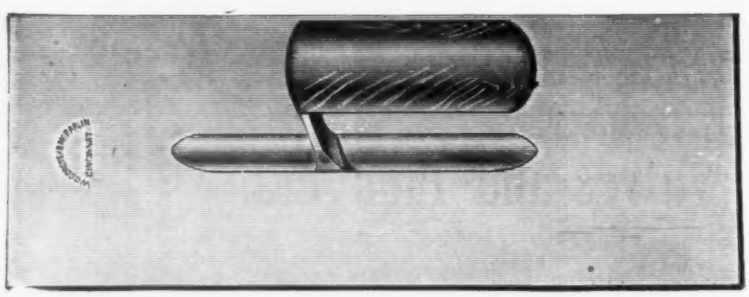
Barrett's Practical Glass Cutters are the standard the world over. Sold by more Hardware Dealers than all other makes combined. Send for prices and sample. W. L. BARRETT, Manufacturer, Bristol, Conn., U. S. A.

"There Are Others,"

But not the Genuine, ALL Imitations.



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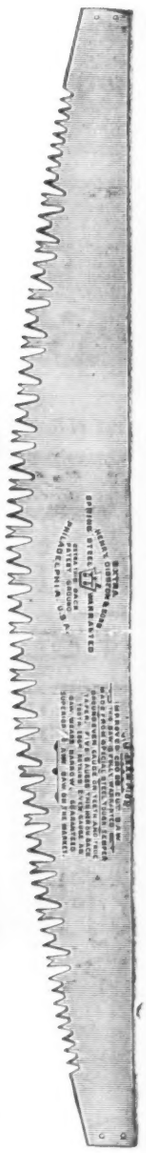

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Others claim a Special Award, but we possess it.

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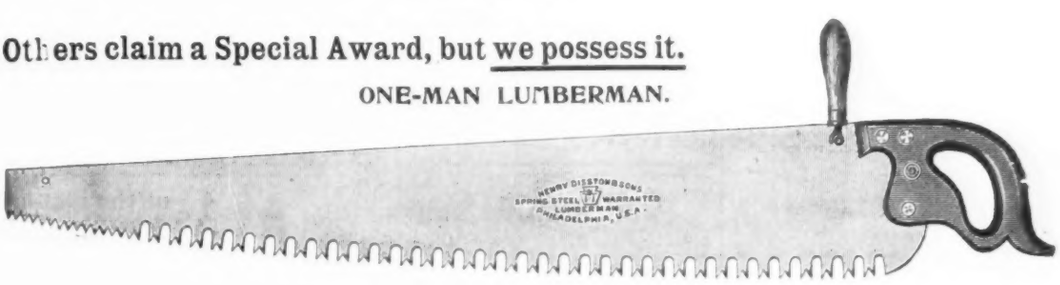

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Take Your Choice

There are two lines of bicycles that hardware dealers can handle,

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A bicycle manufacturer may and may not have a line that goes with a hardware dealer, a jobber picks from the whole lot the goods that he offers with the wants of the hardware dealer in view. From the many good agencies established and from the very many testimonials we have we must feel that we have been successful in our selections.

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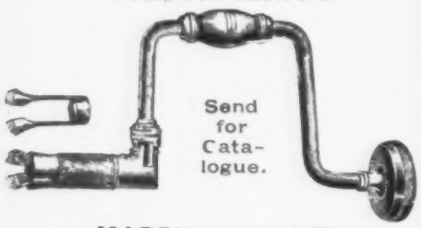

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When using "KEEN" Shakespeare Razor. Retails for $1.50, $2.00, and *Special Ground*, $2.50. SOLE AGENTS FOR
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We have combined two principles in one, and think we have solved the problem of making a bit that is suitable for all around use. Price-lists and samples furnished on application.

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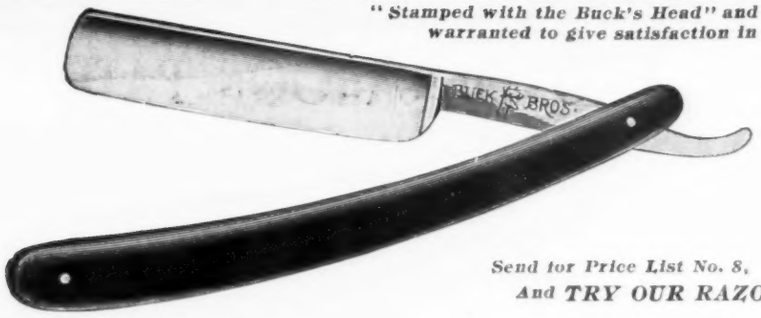

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ESTABLISHED 1825. ESTABLISHED 1825.

IMPORTANT DECISION RELATING TO THE

HEINISCH

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The U. S. Circuit Court, Southern District of New York, Judge Townsend, has rendered a decision in the suit of "R. Heinisch's Sons Co. vs. Hermann Boker & Co."

"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

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N. Y. OFFICE, 90 Chambers St. NEWARK, N. J.
NOT CONNECTED WITH ANY SHEAR COMBINATION.

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CHISELS,
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CUPPED NAIL SETS, ETC.

Also a Full Line of RAZORS,

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Here is where the *bearing comes* on this *perfect cone.*

Read description in "IRON AGE" of Oct. 20, page 45.

WRITE FOR PRICES.

This is the lock where the bolt fastens to the lower shear blade.

"CATTARAUGUS" CONE BEARING SHEAR

66 has no equal

CATTARAUGUS CUTLERY CO., - Little Valley, N. Y.

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Is as much superior to any other device for sowing grain as the modern electric light is better than a tallow candle. The CAHOON is not the lowest price seed sower, but taking into consideration the durability of the machine, the ease with which it is operated, and the quality of its work, it is the cheapest. Pays for itself every day that it is used. Sows all kinds of grain and cleaned grass seed; does five times as much work as can be done by hand with two thirds the amount of seed, and does it better than it can be done in any other way.

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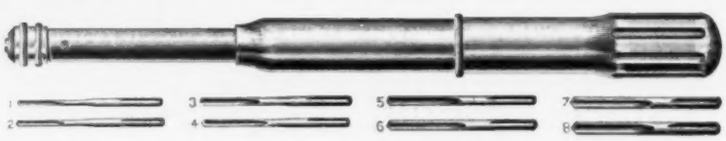
GOODELL AUTOMATIC DRILL



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We manufacture three types of Steel Wire Chains in various sizes which we can furnish plated, tinned, galvanized or japanned. Also made into Halter Chains, Tracers, Kennel Chains, Dog Leads, Tieouts, Cow Ties, etc., etc. Our Plumbers' and Sash Chains are First Quality.

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BUT in all the wide, wide world with its remarkable achievements in the manufacturing line, there is as yet no make of **Silver Plated Ware** that can rightly lay claim to having reached the height of perfection attained in ***Rogers Anchor Brand.***

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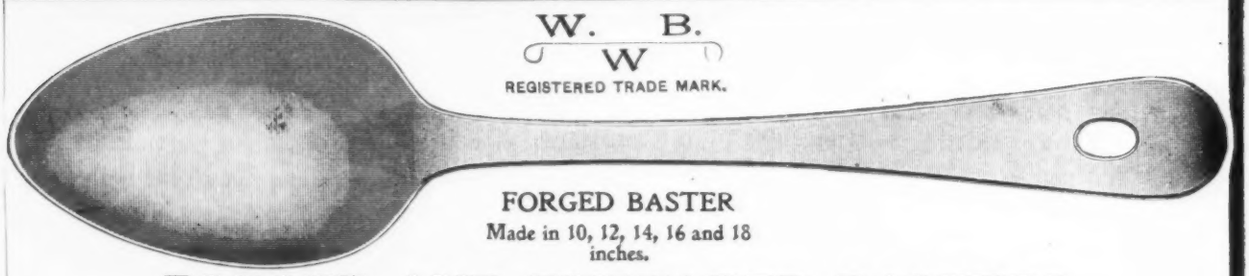

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This is an Electric Lamp set in a White Enamel Parabolic Reflector, and can be attached to the cap or any part of the clothing by means of a stick pin attached to reflector and connected to the battery with a flexible cord. The battery is arranged to be carried on a belt or in the pocket. So the user has free use of hands. The current can be turned off when not in use. Dry batteries are used and can be recharged from direct Incandescent Electric Current Charger and full directions go with each Lamp.

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Measuring Tapes
OF EVERY DESCRIPTION.
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ICE AXES, SAWS, SCALES, and all SUMMER ICE TOOLS.

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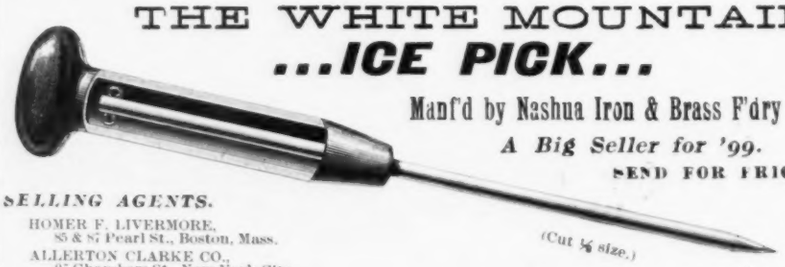

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MANUFACTURERS OF
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Of all sizes, complete with tools, for Hardware, Toy Notion and Variety trades.
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Also Machinists' Tool Chests, empty. Tool Cabinets and Work Benches. Illustrated Catalogue and prices furnished on application.

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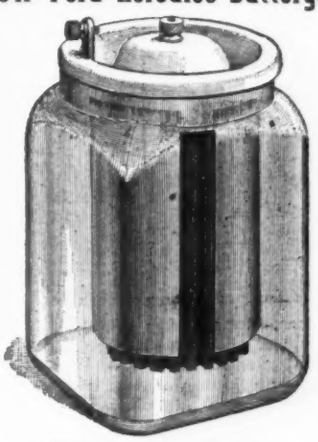

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The circular zinc which surrounds the carbon is attached to the top in such a manner that it cannot come in contact with the carbon, making a short circuit impossible.

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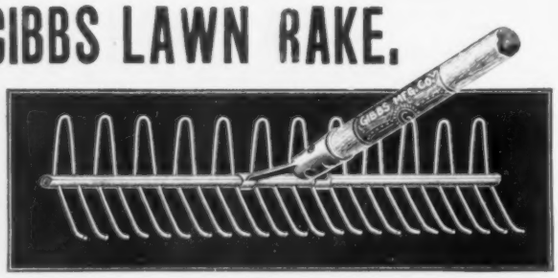

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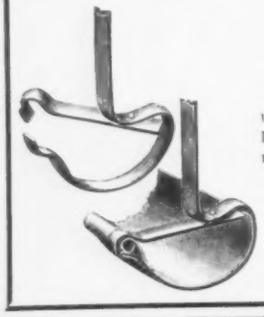

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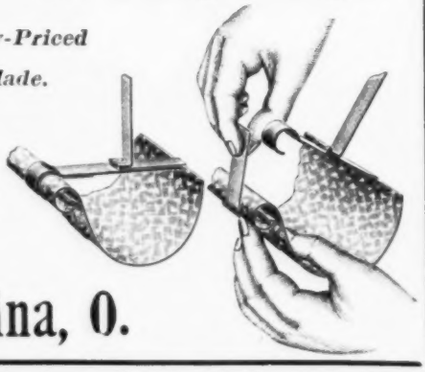

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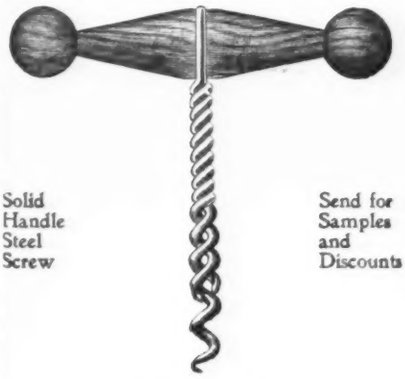

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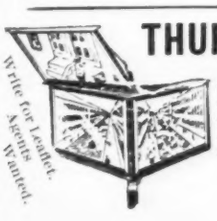

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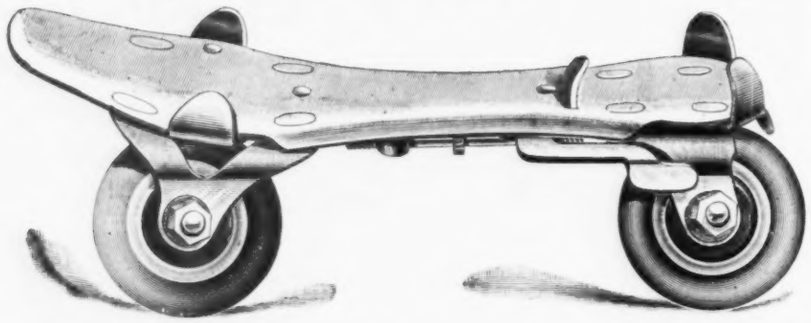

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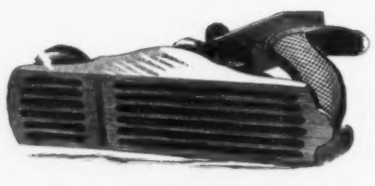

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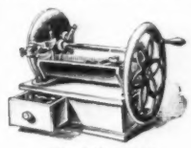

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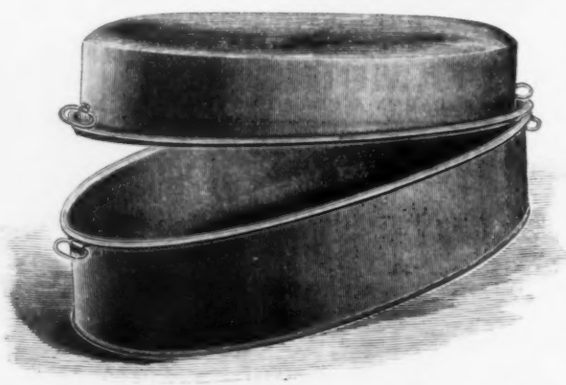

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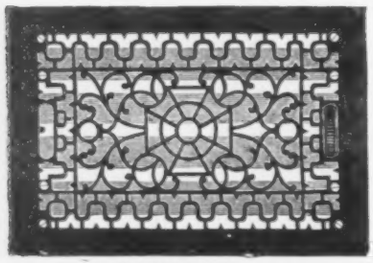

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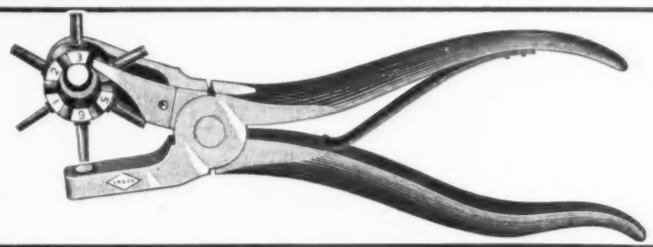

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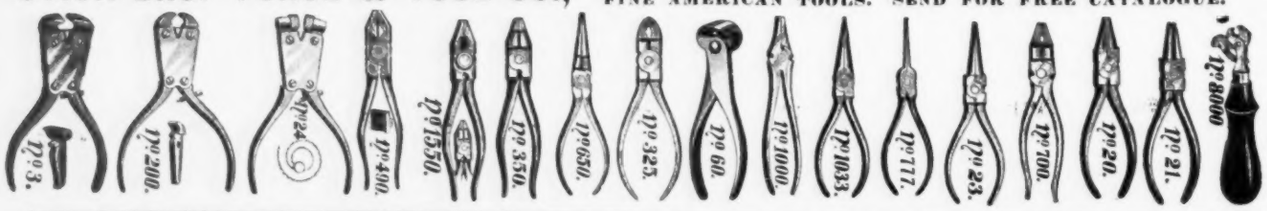

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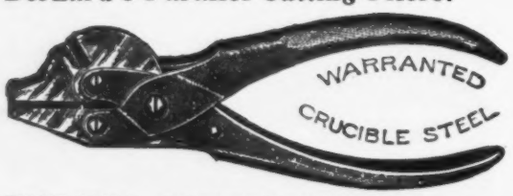

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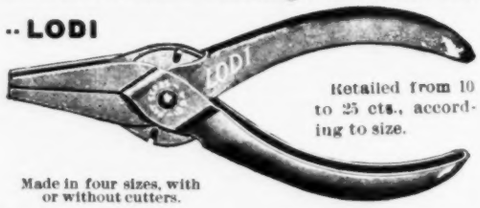

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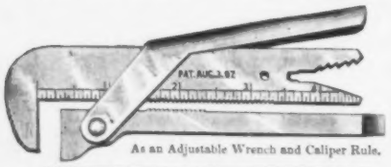

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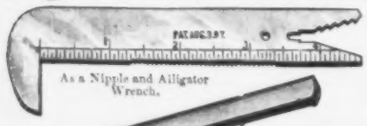

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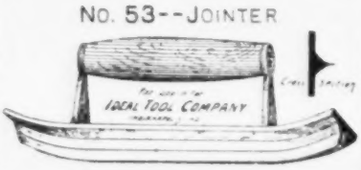

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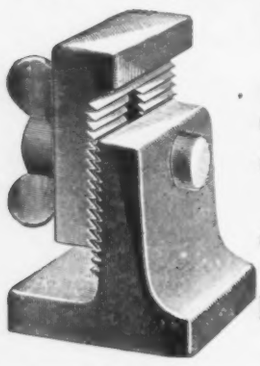

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Outfits for Repairing Boots and Shoes.

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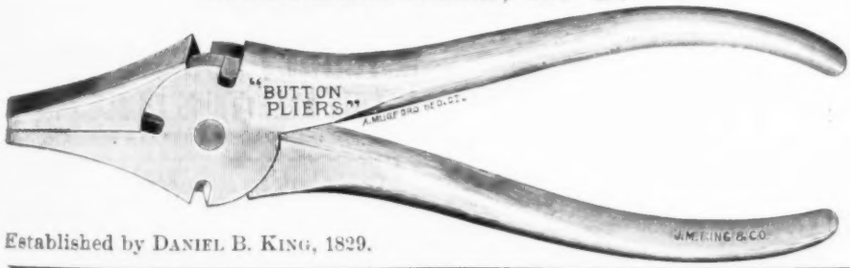

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Quickest-Acting Vise Ever Made.
Holds Frames Securely in any Position Without Injury.
Saves Time and Money and is Cheap.
SOFT LEAD JAWS. Holds ⅝, ¾, ⅞, 1, 1⅛, 1¼ Tube.
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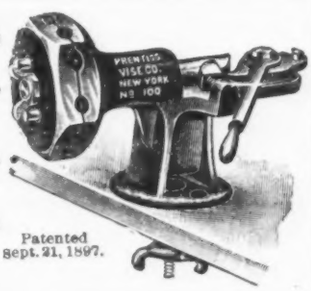

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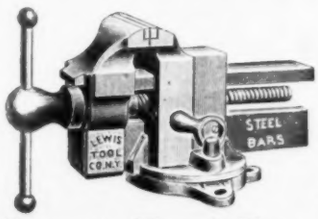

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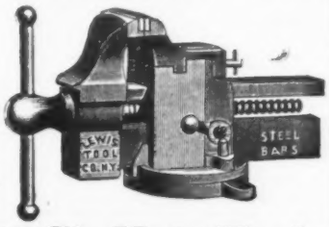

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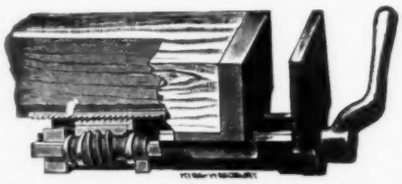

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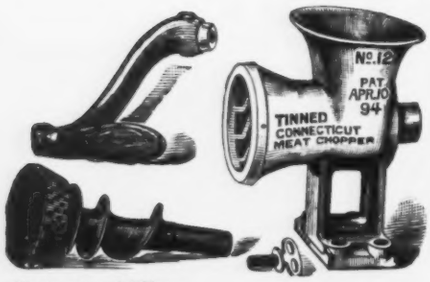

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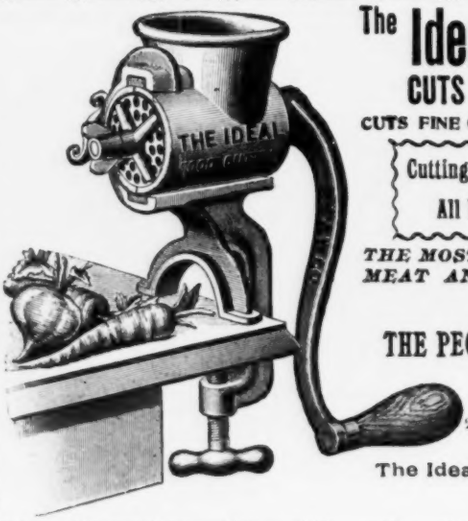

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CUTS FINE OR COARSE JUST AS NEEDED.

Cutting Parts are of Tempered Steel.
All Parts can be Duplicated.

THE MOST SATISFACTORY FAMILY MEAT AND FOOD CUTTER EVER MADE.

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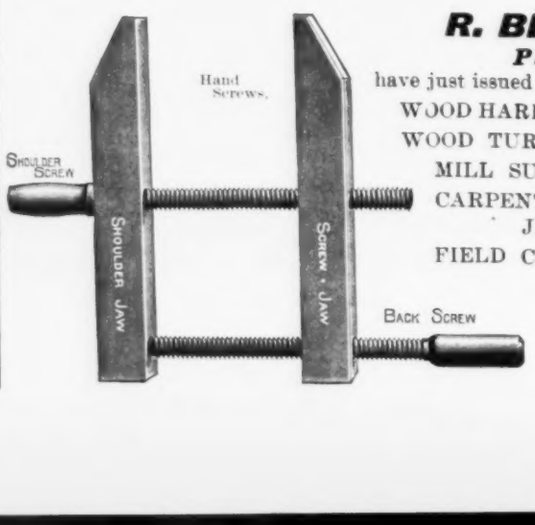

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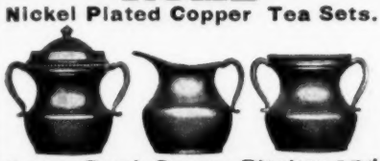

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Heavily Silver Lined.

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NICKEL PLATED COPPER WARE.

Tea and Range Kettles, Tea and Coffee Pots, Silver and Tin Lined, Trays, Serving Dishes, Pitchers, Insets, Wash Basins, Wash Boilers, Tea Sets, Cups, Dippers, Stove Tanks, Cuspidors, Etc.,

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The MILBRADT ROLLING Step Ladders

that were put up 15 years ago are still working entirely satisfactorily. Since then they have been improved a great many times, and we now only repeat the language of our customers when we say: "We do not see how you can make any further improvements on the ladders, as they are perfect in every respect."

The *Milbradt Rolling Step Ladders* are made to order and to fit all kinds of shelving, in various styles to suit all purposes, and are especially adapted for Hardware Stores. Write for Catalogue.

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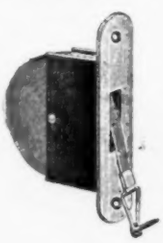

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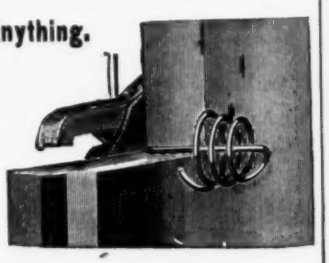

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has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for 15 years.

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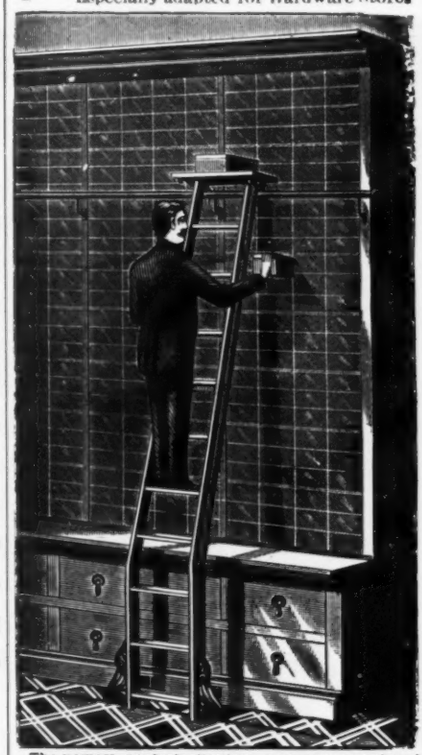
THE BICYCLE STEP LADDER.
Especially adapted for Hardware Stores



The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.

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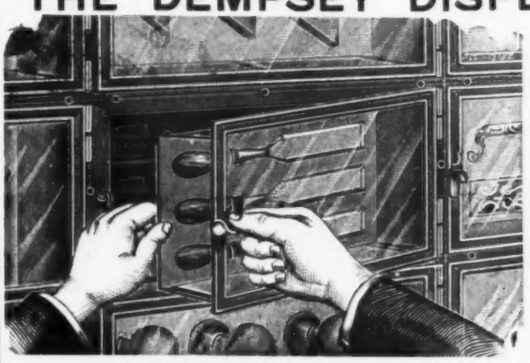

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Stock is never handled until sale is made.

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Made of Wood. No screws or nails used to work out and cut your shelving.

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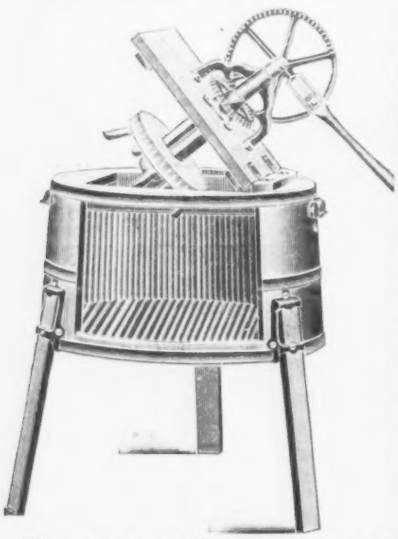

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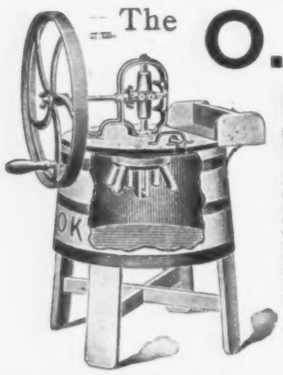

The O. K. Rotary Washer...

has **revolving steel ball gearing**, thus superior to others. Wheel continues one direction, the stirrer in both directions. Lid closes tight.

No escape of steam.

Worked by hand or belt.

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OF ALL SIZES AND KINDS

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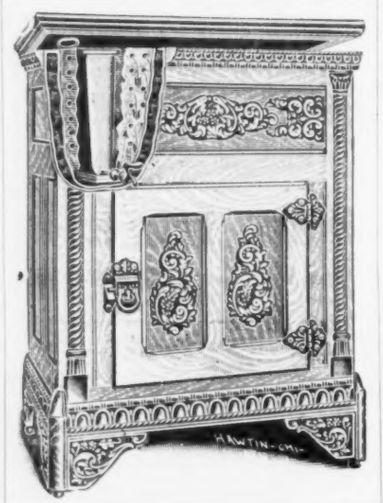

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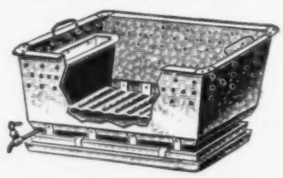

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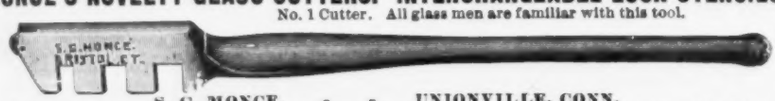

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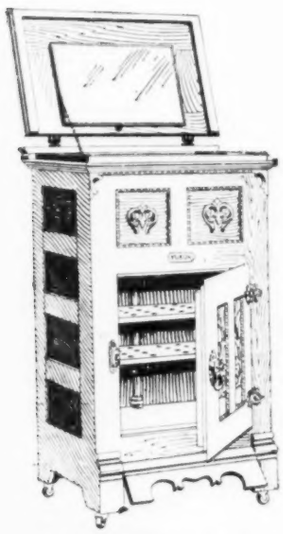
YUKON *Refrigerators.*



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The Yukon is made in two styles, with ***Removable Flues,*** and with the ***entire Ice Chamber Removable.***

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Buy the Yukon and you will have the best Refrigerator made as well as an elegant piece of furniture.

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Corrugated on Both Sides and Bottom.

Sides may be used as a Wash Board.

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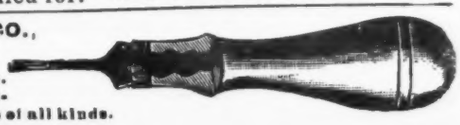

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Light in Weight,
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PULLS TACKS, BRADS, NAILS UP TO TWO INCH.

2-3 Actual Size.

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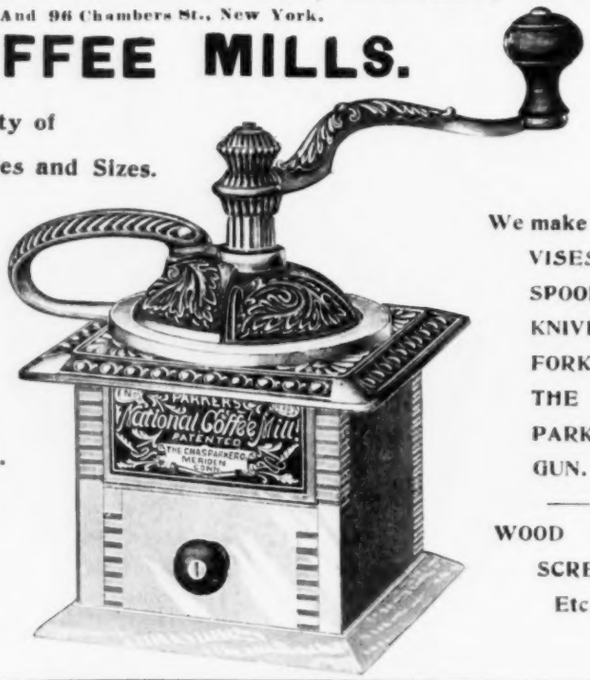

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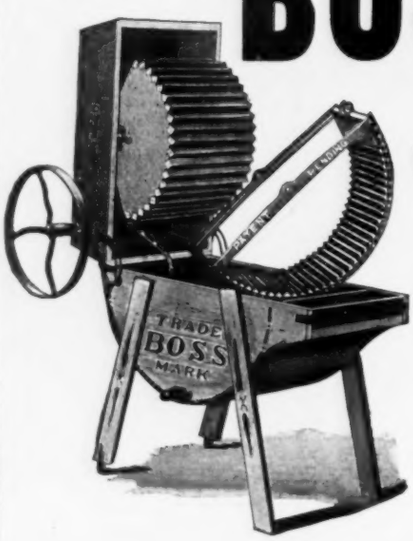

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With Steel Frame Cylinder,

Allowing 2½ inch more space for clothes, giving a better circulation of water through the clothes, thereby cleansing them more thoroughly than by any other washer.

Order sample and see for yourself the superior advantages embodied in

THE "BOSS"

over any other. By handling the improved "BOSS" WASHER you will have the only genuine and best ever made.

For complete description and prices send for Circular "A."

Address the Manufacturers.

BOSS
WASHING MCH'E CO.,
308-318 Pearl St.,
CINCINNATI, OHIO.

STEEL DOOR HANGERS.

WRITE FOR PRICES ON

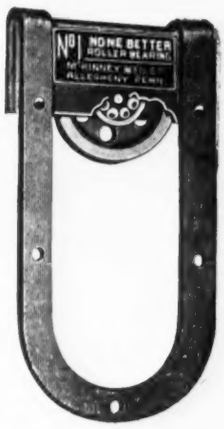
No. 1 Special and No. 2 Standard.

ALSO "NONE BETTER" TRACK AND STAY ROLLERS.

(Steel Hinges and Butts.) McKINNEY MFG. CO., Allegheny, Pa.

SELLING AGENTS:

John H. Graham & Co., 113 Chambers Street, New York. Henry Keidel & Co., 32 Hopkins Place, Baltimore Md



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(PATENTED SEPTEMBER 14, 1897.)

SWINGING ARCH and REMOVABLE CYLINDER.

ESPECIALLY CONVENIENT FOR LARD PRESSING.

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NATIONAL SPECIALTY MFG. CO., Lehigh Ave. and Third St., Philadelphia, Pa.

TUBE WELL SUPPLIES.

COOK'S PATENT. TUBE WELL STRAINERS AND STEAM PUMPS A SPECIALTY

A. D. COOK,

Sole Manufacturer,

LAWRENCEBURG, INDIANA, U. S. A.

SEND FOR CATALOG.

TO THE DEALER

a saving of time with out loss of profit

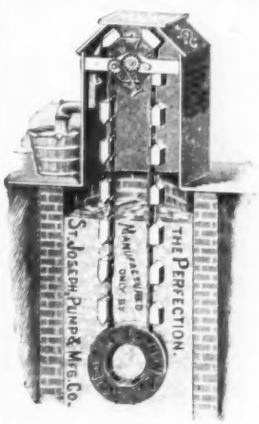
A case of ***Ever Ready*** Hoops and Clamps supplies the dealer with an article in compact, easy selling shape, and to his customer a hoop quickly applied to any size tub without use of special tools; makes a better finished, stronger job than by old methods. ***Ever Ready*** Hoops fit when applied. No hammering required. **Adjustable to any size tub—no rivets.**

Send for descriptive circular.

Weaver, Palmer & Richmond

ROCHESTER, N. Y.

The "Perfection"—



THIS THE SIMPLEST STRUCTURE FOR RAISING WATER OF THE CONTINENT GUARANTEED NEVER TO FREEZE.

has so many points of merit, that we cannot attempt to enumerate them at this time. It is absolutely the only Elevator Pump that has chain or bucket manufactured of Black Open Hearth Steel, Galvanized after construction, and entirely free from soldering. Have received medals and diplomas wherever exhibited, the latest medal being received from the Trans-Mississippi Exposition held at Omaha.

Do not delay. Write to-day for Catalogue, Circulars, Prices, etc. We want your trade.

St. Joseph Pump & Mfg. Co.,

ST. JOSEPH, MO., U. S. A.

SHIP and YACHT APPLIANCES.

HAND POWER PUMPS—Free and Force. Yachts, Schooners, Ships, Barges, Scows, (Deck and Bilge), Contractors' Trenches, Vaults, Cesspools, Manholes, Brick Yards, Mines, Irrigating, Tanneries, Weir Pole Driving, or for any duty where Hand Power is used.

WINCHES. Cargo, Chandelier, Derrick, Portable and Centerboard.

WINDLASSES. Gypsy and Pump Brake.

STEERING GEARS Cape Catboats, Knockabouts, Sloops, Schooners, Ships, Launches, and Steamboats.

RELIEF STEERING GEARS. Steam Yachts, Steamships.

CAPSTANS. Common and Power.

FANCY WOOD STEERING WHEELS. 19 inch to 72 inch.

BRASS WORK. Stanchions, Deck Plates and Gratings, Hood Ventilators.

MECHANICAL FOG HORNS. King (Lever), Edson (Crank).

Street Sweeping Machines.

Automatic Bottle Fillers.

Send for Illustrated Catalogue.

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HAVE YOU SEEN THE

"QUAD" "QUINT"

For boring Auger Mortise for Sash Pulleys?

Send for Circular and Price.

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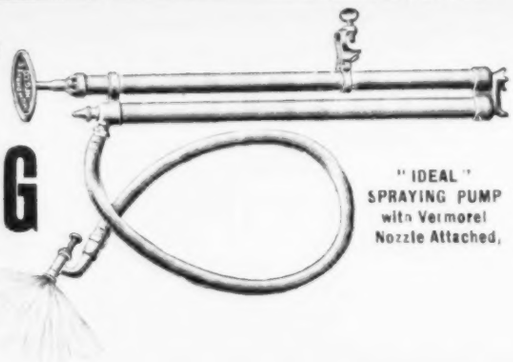
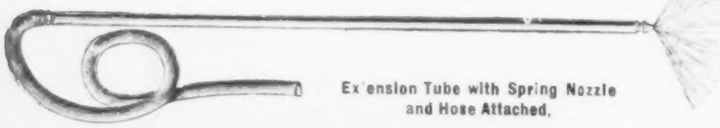
SPRAYING



"IDEAL" SPRAYING PUMP with Vermorel Nozzle Attached.

Send for our book—FREE—with full instructions on spraying and its applications. When and how to spray, the profits to be derived, the value and uses of the spraying machine, the cost to the user, etc., are all fully explained therein, and contains just such information as will readily enable the **DEALER** to sell our products.



Extension Tube with Spring Nozzle and Hose Attached.

PUMPS

PUMPS
FOR EVERY DUTY.

For House, Farm, Factory, Mine and Mill use. For Electric, Steam, Water, Gas and Gasoline Power.

THE DEMING COMPANY.

SALEM, OHIO.

GENERAL AGENCIES: Henion & Hubbell, Chicago. W. P. Dallett, Philadelphia. C. J. Jager Co., Boston. Harris Pump & Supply Co., Pittsburg. The English Supply & Engine Co., Kansas City.

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GET OUR REDUCED PRICES

WELL TANK & SPRAY PUMPS

HAY CARRIERS, FORKS, PULLEYS &c.

F. E. MYERS & BRO.

ASHLAND, OHIO.

Pumps.

Iron and Brass Pitcher Spout Cylinders and Cast Iron **SINKS.**

Send for our New Catalog, just issued.

THE BARNES MANUF'G CO. Mansfield, O.

STAR WIND MILLS,

All Kinds and Sizes.

"Hoosier" and "Fast Mail" Iron Pumps.

Secure the Agency for 1899.

Galvanized Steel Star Back Geared Wind Mills.
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Water Tanks, Wood or Steel.

Tubular Well Tools, Valves, Tubular Well Points, Drive Well Points, Working Barrels, Hose and Hose Goods, Pipe and Fittings, Hydrants and Street Washers, all kinds of Water Supply Goods.

Estimates and advice furnished on *Steel Sub-Structure* work of all kinds.

Largest and finest equipped factory in America for this class of goods.

Inquiries respectfully solicited. Catalogue with discount sheet mailed on application. Address

FLINT & WALLING MFG. CO., 50 Oak St., Kendallville, Ind.

Red Jacket

SPRAY PUMP

IS THE BEST FOR GENERAL USE.

WE MAKE

ALL KINDS OF PUMPS,

House Force,
Set Length,
Deep and
Shallow Well.

ALSO

HAY TOOLS.

Get Our Prices.

RED JACKET MFG. CO., - Davenport, Iowa.

SPRAY PUMPS and NOZZLES.

ALL SIZES AND STYLES.

No stock of Spray Pumps is complete without GOULDS "POMONA."

It stands without a peer. Notice the construction.

Simple, Efficient, Powerful.

NOZZLES FOR EVERY SERVICE.

Write for book—

"How to Spray, When to Spray, What Pumps to Use."

THE GOULDS MFG. CO.,

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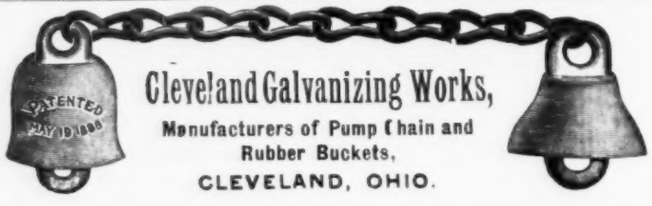

Cleveland Galvanizing Works,

Manufacturers of Pump Chain and Rubber Buckets,

CLEVELAND, OHIO.

THE TOLER

Liquid Door Check and Spring

PERFECTION ATTAINED AT LAST.

Entirely new in style and mechanism, **strong simple and effective**, giving in results all the best achievements of other checks, together with new and valuable features only to be found in this.

It has a vertical case, with openings only at the top.

It has no plugs or caps screwed to the cylinder ends. It cannot leak. There is no way for the liquid to escape after the Check is applied.

The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material throughout.

It works to perfection, closing the door quickly and gently.

It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

Regular finish, Gold Bronze. No extra price for Silver Bronze or Dead Black when so ordered. Furnished Plated in Brass, Nickel, Copper or Silver, Plain or Oxidized, at a reasonable extra charge. No extra charge for Brackets where needed.

Manufactured by

JOHN TOLER, SONS & CO.,

NEWARK, N. J., U. S. A.

W. H. QUINN & CO., General Agents, No. 103 Chambers St., NEW YORK.

IRON and LEAD SASH WEIGHTS

Ventilators, Valve Stop Boxes, Hydrant Boxes, Meter Boxes, Washers, Special Sizes Iron and Lead Weights to Order and all Kinds of Castings.

ENTERPRISE FOUNDRY CO.,

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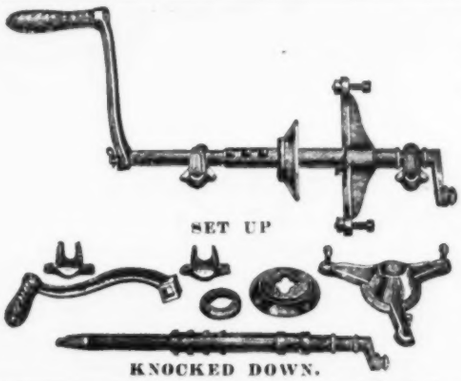

THE LATEST AND BEST.

Giant Grind Stone Hanger.

ONE SIZE FOR ALL.

Stones held true and fast without wedging or cementing.

Packed One-half Dozen in a box. Weight, per dozen, 80 lbs.

Send for Price-List.

Stowell Mfg. & Foundry Co,

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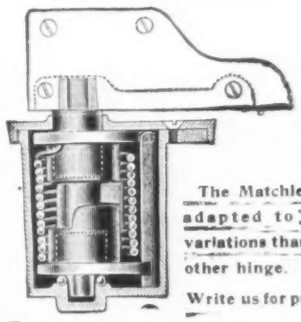
THE MATCHLESS

Double-Acting Floor Hinge.

BALL BEARING.



The Matchless is adapted to more variations than any other hinge.

Write us for prices.

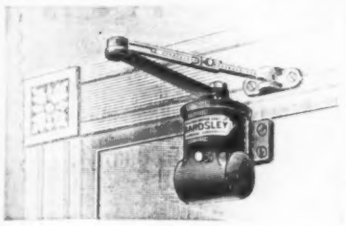
LAWSON MANUFACTURING CO.,

MAIN OFFICE:

Chicago. Milwaukee, Wisconsin. New York.

THE "BARDSLEY"

Oil Door Check and Spring



HAS new and improved features: is free from packing friction: the checking power can be released when the door is near the closing point: more oil can be added when needed without taking it from the door and it can be readily taken apart with the aid of a screw-driver when repairs are necessary.

Size A,	price	each,	$3 50
" B,	"	"	4 00
" C,	"	"	5 00
" D,	"	"	6 00
" E,	"	"	7 00

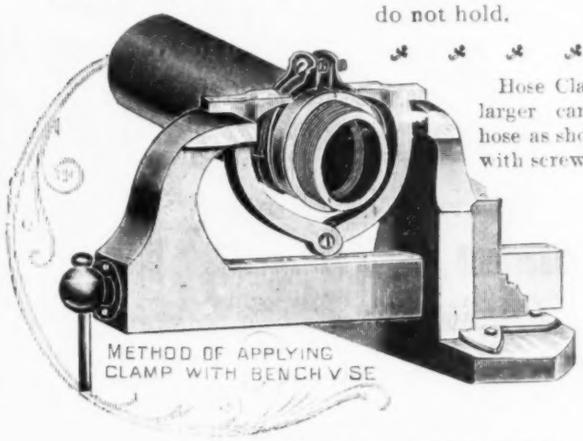
LIBERAL DISCOUNTS TO THE TRADE.

JOS. BARDSLEY,

147 to 161 Baxter St., NEW YORK CITY.

A CURE FOR LEAKY HOSE

is for the dealer to order all hose coupled with *SHERMAN CLAMPS*, as that will remedy many leaks that come from wire bands that stretch or cast clamps that break and do not hold.



Hose Clamps 1 in. and larger can be put on hose as shown in cut, or with screw driver alone.

Small sizes ½ and ¾ in. for lawn hose are applied to hose with screw driver alone.

SOLD BY ALL JOBBERS.

Manufactured by **H. B. SHERMAN MFG. CO., Battle Creek, Mich.**

NEW CRESCENT HOSE MENDER.

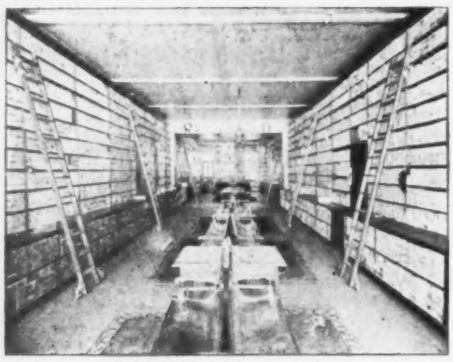
IT'S FLAT—Won't cut the hose; mender and bands are of brass; pliers of iron, handsomely Japanned. Simple, convenient. Screw menders tear the lining and wire bands cut. Our flat bands make secure couplings and positively will not injure the hose. Are rapid sellers.

Send for prices and catalogue of these goods and our line of

Lawn Sprinklers, Bath-Room Fixtures, etc.

CRESCENT BRASS & IRON COMPANY,

DETROIT, - MICH.

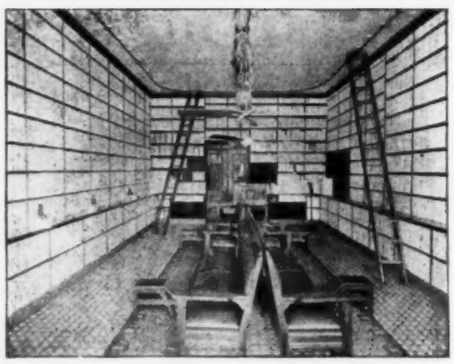


Our Ladders

Are adapted for any kind of a store.

Send for Catalogue.

Coburn Trolley Track Mfg. Co.,
HOLYOKE, MASS.



UNITED STATES STEEL LOCK Co CLINTON, IOWA.

Sole makers of the

WARNER LOCKS

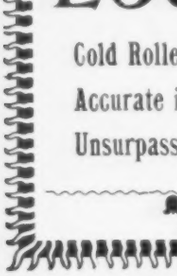
LOCKS.

Cold Rolled Steel,
Accurate in Construction,
Unsurpassed in Quality.

Hardware.

Artistic in Design,
Elegant in Finish,
Moderate in Price.

The Walda Sectional Window Weight



Square and Round weights. Hang exactly from centre. Only 10 inch pockets required. Eliminates use of lead weights.

The Hardware Dealer

with one-sixth the stock required in one piece weights can fill any order. Weights crated with 100 lbs. in a box, both plainly marked.

The Contractor

saves time, money and delay by balancing windows exactly at once.

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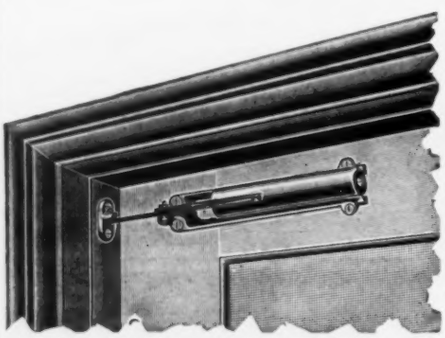
Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,
Nos. 16 & 18 Chambers Street, New York,
MANUFACTURERS OF
BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.



THE WARNER . . . SCREEN DOOR CHECK.

An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

GET OUR NEW CATALOGUE AND PRICES.

ARCADE MANF'G CO., Freeport, Ill., U. S. A.

Larimer

Automatic Door and Screen Door Checks and Springs

Equal to the Best—Cheap as the Cheapest—Noiseless.

LARIMER MANUFACTURING CO.,
No. 201 Telephone Bldg., Pittsburgh.
All shipments from Factory, Latrobe, Pa.

THE Grand Rapids All-Steel Sash Pulley

No Screws. No Nails. Economical.

A tongue on each end fastens it in the wood. Hundreds of thousands sold. Write for prices and free samples. The jobbers are selling immense quantities. Write quick.

Grand Rapids Sash Pulley Co,
No. 1 Pearl St., - Grand Rapids, Mich.

1000 LBS. WITHOUT CRUSHING.

(Cut of Washer, Full Size.)

Each ball in the washer in Stanley's Ball Bearing Steel Butts is required to stand the above test. As there are from 8 to 12 balls in each washer, there can be no possible wearing down of butt under any strain that can be put upon it. Being made of wrought steel the butts will not break. They never require oiling.

The Stanley Works, Dept. F, NEW BRITAIN CONN. 79 Chambers St., N. Y.

Celebrated STAR BRAND

JACK CHAINS,
SAFETY, PLUMBERS' and
LADDER CHAINS,
ESCUTCHEON PINS.

Now made by

The Turner & Seymour Mfg. Co.,

TORRINGTON, CONN.

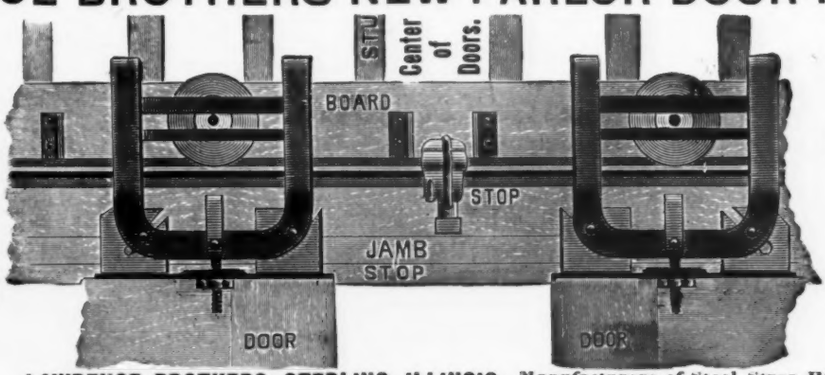
Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware
and Fancy Metal Goods.

LAWRENCE BROTHERS NEW PARLOR DOOR HANGER

Steel Frame,

Vulcanized Hard Fiber Wheel,

Double Flanged Steel Rail.



Perfectly Noiseless,

Hanger Frame will work on either side of Base Plate.

No Rights or Lefts.

No Metal Flanges to Rattle.

Apply for Circulars and Prices.

LAWRENCE BROTHERS, STERLING, ILLINOIS, Manufacturers of Steel Strap Hinges, Door Hangers, Pulleys, and other Hardware Specialties.

Galvanized Awning Slide Rods.

Galvanized by Improved Process, insuring Perfect Finish.
Now is the time to buy before prices go still higher.

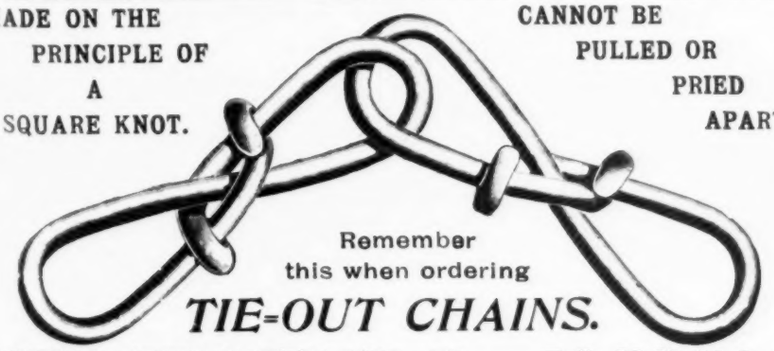
....WRITE FOR PRICES....

Manufactured by **Garland Chain Co., Rankin Station, Pa., U.S.A.**

Eastern Sales Agents:
HENDRICKS & CLASS,
150 Nassau St., New York, U. S. A.

MADE ON THE PRINCIPLE OF A SQUARE KNOT.

CANNOT BE PULLED OR PRIED APART.



Remember this when ordering

TIE-OUT CHAINS.

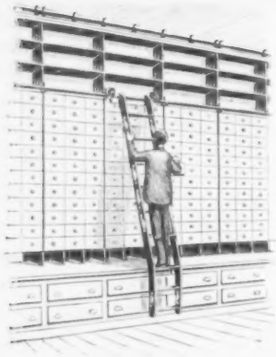
ONEIDA COMMUNITY, LTD., Niagara Falls, N. Y., U.S.A

AUTOMATIC SCREEN DOOR CATCH.

These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. Counted counter sample furnished with first order of 2 doren catches. Ask your jobbers for them. If they don't keep them, write us.

THE AUTOMATIC DOOR CATCH CO.,

133-137 Lake St., Chicago, Ill.



The Lane Store Ladder.

Supported by a Steel Ball Bearing Carriage having fibre tread wheels.

The Track does not obstruct shelving (is exactly in front of one of the shelves), and has movable brackets that are secured to uprights wherever they may be. No rail on counter or floor. Ladders made to order at factory, complete with fixtures attached. Customer needs only erect rail and hang ladder on it. No good store can afford to get along without a rolling ladder. **Lane's is best.** Send for catalogue.

LANE BROTHERS CO.,

Prospect and River Sts., POUGHKEEPSIE, N. Y.

THE
READING STANDARD
BLOCK (Patented).

This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
READING, PA.

TYLER'S SAFETY WEANER

Pat. Oct. 2, 1888

No sharp points in front to prick or gouge the cow.

Perfectly safe and harmless. Is the only Weaner having any side protection to prevent sucking sidewise, and is warranted to wean the most obstinate case without cruelty or injury. Does not go through nose or wing loose to wear the nose or make it sore.

HALTER WEANER.

Pat. Sep. 6, 1892

Does not go into the nose, but is put on same as a halter and will wean any calf and prevent cows sucking themselves. Made in four sizes, same as safety weaner; No. 1 for small calves, No. 2 for large calves, No. 3 for yearlings, No. 4 for 2 year olds.

FOR SALE BY ALL JOBBERS.
Made by
WM. E. PRATT MFG. CO., Chicago.
Mfrs. of Foot Scrapers, Hog Rings, Bill Files, etc.

HALT!

HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys

MANUFACTURED BY
THOMAS MORTON.
65 Elizabeth Street,
NEW YORK.

IDEAL DETACHABLE
HOLD BACK
SPRING HINGE

Makes putting up and taking down Screen Doors an easy matter. The door is held as securely as by the old way, and is put up or taken down in a jiffy by simply turning the button.

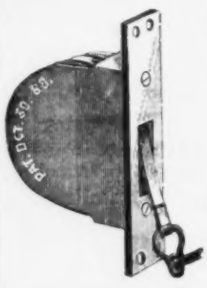
Ask for further particulars and free sample.

STOVER MFG. CO.,
Freeport, Ill., U. S. A.
145 River St.

SILVER LAKE SASH CORD
Has been the standard for thirty years.

Every Hank Bears the Above Label.
SEND FOR SAMPLE.

SASH WEIGHTS.
E. E. BROWN & CO.,
McKean and Meadow Sts.,
PHILADELPHIA, - - PA.



10 YEARS
Caldwell Sash Balance.
It stands the test of time.
Caldwell Mfg. Co.,
Rochester, N. Y.

The LIGHTNING BEST CHEAP CHURN MADE.

Send for Catalogue.
Agents Wanted.
PORTER BLANCHARD'S SONS CO.
Nashua, N. H., U. S. A.

PORTER SCREEN MANUFACTURING CO.,
Manufacturers of
Door and Window Screens,
CATALOGUE FREE. Burlington, Vt.

GEM NAIL CLIPPER.

Cleans.
Cuts.
Files.

It is a neat, well made, nickel plated article. Put up attractively and sold cheaply. Send for circulars and prices.
H. C. COOK & CO., Ansonia, Conn., U. S. A.

McCABE Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
SEND FOR CATALOGUE.
McCabe Hanger Mfg. Co.,
583-543 West 22d St., New York.

"PIONEER" FIFTY POINT CARBON STEEL TUBING

The uniformity obtained from our process of manufacture is especially desirable for bicycle purposes.

We invite our customers to come in on our floor and select their tube—test specimens from the general run, and to take any piece they choose to select as a sample of excellence.

NO SPECIALLY PREPARED SAMPLES.

THE
POPE TUBE CO.,
HARTFORD, CONN.

"Pioneers" in Correct Composition.

We should be pleased to quote you discounts on application. Send for printed matter.

STEEL FOR PRESSED, STAMPED, DRAWN AND PLATED WORK.

ESTABLISHED 1877. INCORPORATED 1884

The WILMOT & HOBBS Mfg. Co.

MANUFACTURERS & EXPORTERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER
& OPEN HEARTH, HOT ROLLED, ANNEALED & PICKLED, ALSO
BRIGHT COLD ROLLED "SWEDOH" STEEL.
UNEXCELLED FOR PRESSED, STAMPED, DRAWN & PLATED WORK.

WILMOT'S PATENT
"CLINCHER" CYCLE TUBING
STRONGER THAN THE SEAMLESS.

WE MAKE A SPECIALTY OF
WILMOT'S PATENT SPRING STEEL BEDSTEAD TUBING
OF SUPERIOR FINISH, LIGHTNESS & STRENGTH.
ENGINEERS', & STEAMBOAT SETS, "COPPERIZED" ALSO NICKEL, BRASS-PLATED & JAPANNED.

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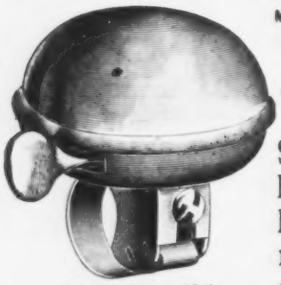

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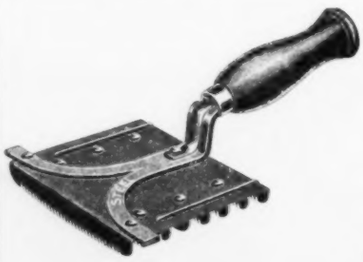

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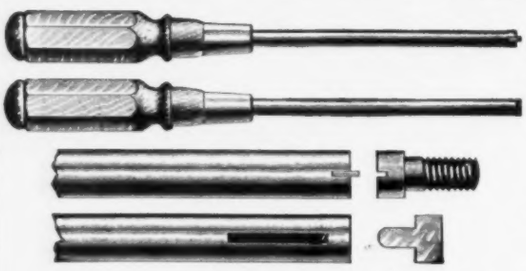

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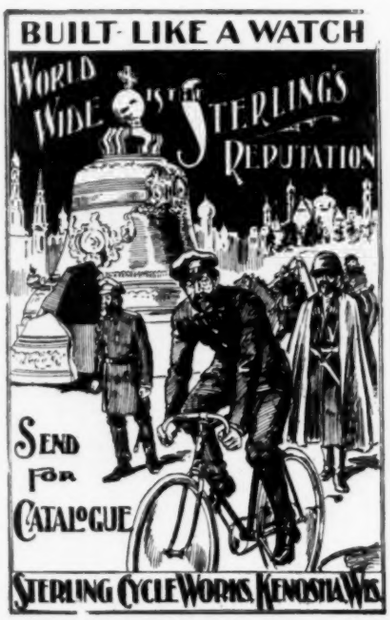

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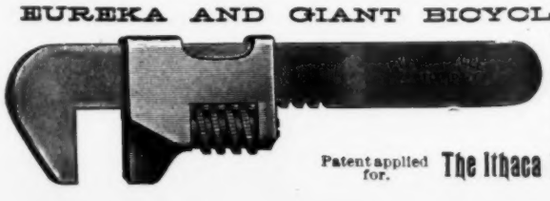

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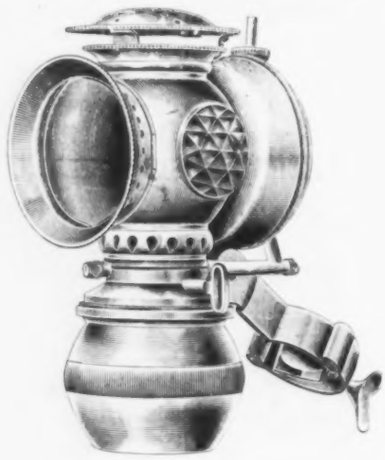

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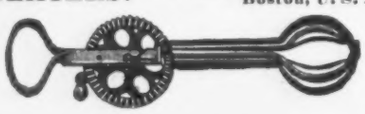

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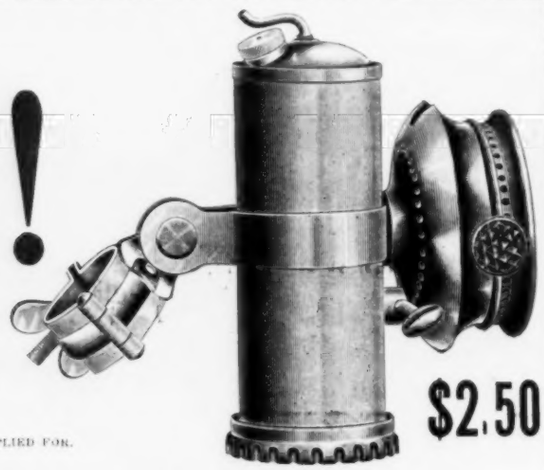

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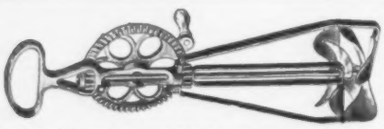

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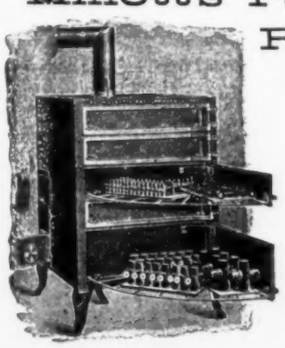

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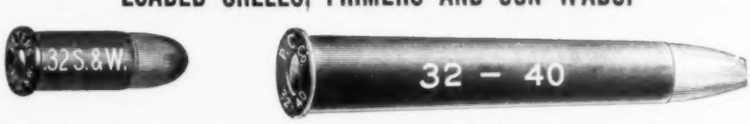

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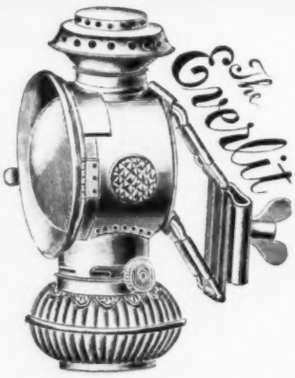

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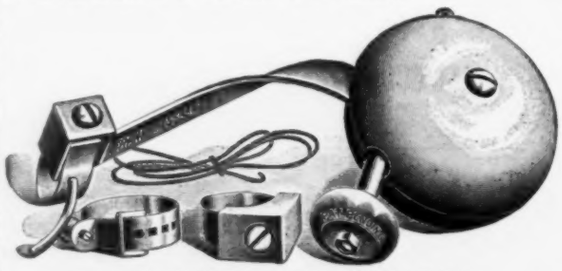

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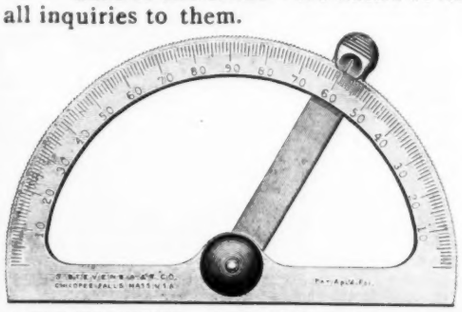

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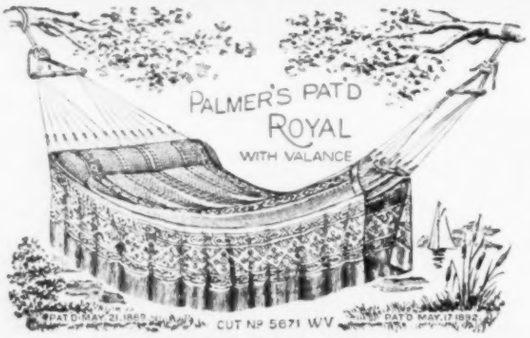

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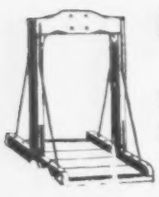

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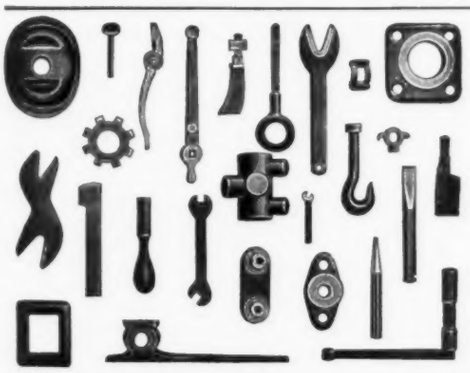

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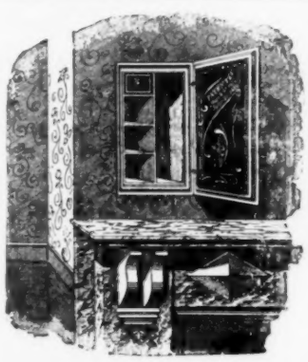

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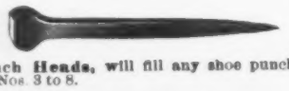

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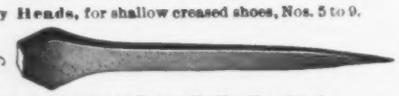

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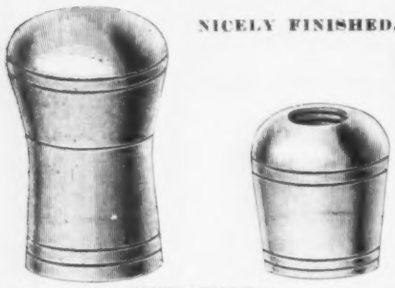

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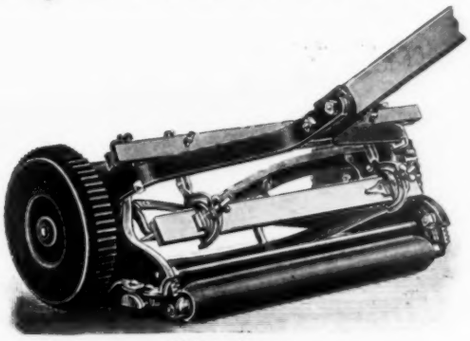

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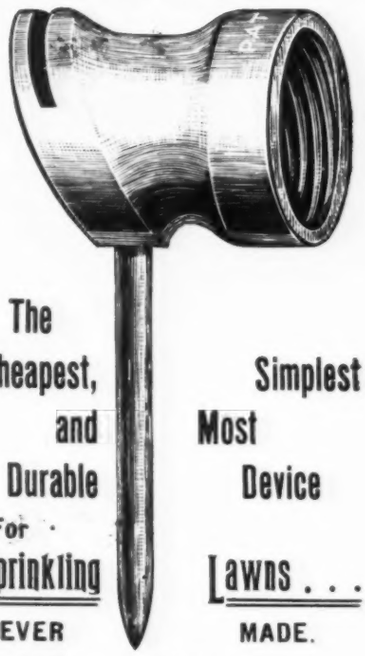

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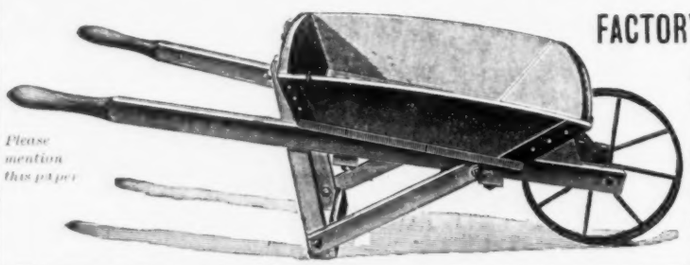

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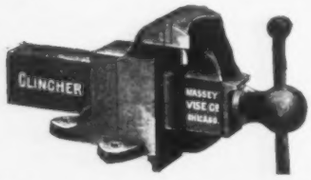

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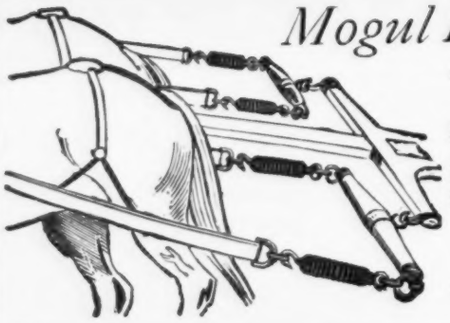

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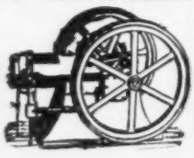

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Veeder Mfg. Co., Hartford, Conn.

Bicycle Wrenches.
Ithaca Drop Forge Co., Ithaca, N. Y.
Springfield Drop Forging Co., Springfield, Mass.
Star Mfg. Co., Carpentersville, Ill.

Bird Cages.
Hendryx, Andrew B. Co., New Haven, Conn.

Bits.
Conn. Valley Mfg. Co., Centerbrook, Ct.
Imperial Bit & Snap Co., Racine, Wis.

Bit Braces.
Mason & Parker, Winchendon, Mass.

Black Plate.
American Tin Plate Co., Chicago, Ill.

Blocks, Tackle.
Boston & Lockport Block Co., Boston.
Burr Mfg. Co., Cleveland, Ohio.
Fulton Iron & Eng. Wks. Detroit, Mich
Lane Bros. Co., Poughkeepsie, N. Y.
Union Hardware Co., Torrington, Conn.

Blowers.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co. Buffalo, N. Y.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Sturtevant, B. F. Co., Boston, Mass.
Wilbraham-Baker Blower Co., Phila., Pa.

Blowers, Steam Jet.
Eynon-Evans Mfg. Co., Phila., Pa.

Boat Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Boats.
Daimler Mfg. Co., Long Island City, N. Y.

Boiler Makers' Machinery.
Prentice Bros., Worcester, Mass.

Boiler Plates.
Lukens Iron & Steel Co., Coatesville, Pa
Seidel & Hastings Co., Wilmington, Del

Boiler Tubes.
Hungerford, U. T., Brass & Copper Co. 121 Worth St., N. Y.
National Tube Works Co., McKeesport, Pa.

Boiler Tube Cleaners.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Boilers, Steam.
Babcock & Wilcox Co., 30 Cortlandt St.
Cahall Sales Dept., Pittsburgh, Pa.
Harrison Safety Boiler Wks., Phila., Pa.
Pollock, W. B. Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.
Chambers Bros. Co., Philadelphia.
Heiwig Mfg. Co., St. Paul, Minn.
Porter, H. K., Boston, Mass.

Bolt and Nut Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
Bardtict, O. C., Buffalo, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
National Machinery Co., Tiffin, Ohio.

Bolts.
Anthony Bates Mch. Co., Worcester, Mass.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg Co., Pawtucket, R. I.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Works, Rockford, Ill.
Shelton Co., Birmingham, Conn.
Smith, Thos. Co., Worcester, Mass.
Sternbergh, J. H. & Son, Reading, Pa.

Books.
Williams, David, Company, 232-238 William Street, N. Y.

Bottling Apparatus.
McKenna, A & T., Pittsburgh, Pa.

Box Fixtures.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y

Box Straps and Corners.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
Quincy Hdw. Mfg. Co., Quincy, Ill.

Boxes, Hdw. Shelf, &c.
Green, A. H. & Co., 22 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va

Boxwood Sawdust.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Brackets, Shelf.
Atlas Mfg. Co., New Haven, Conn.

Brass and Copper.
Ansonia Brass & Copper Co., N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Davol, John & Sons, 100 John, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Hussey, C. G. & Co., Pittsburgh, Pa.
Plume & Atwood Mfg. Co., 29 Murray St., N. Y.
Randolph & Clowes, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y

Brass and Copper Wire.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y

Brass Butt Hinges.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y
Tiebout, W. & J., 16 & 18 Chambers.

Brass Butts.
Hungerford U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Founders.
Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co. Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

Brass Goods.
Brass Goods Mfg. Co., 88 Chambers.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
Hungerford U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brazers.
White Mfg. Co., Chicago, Ill.

Bridge Builders.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.

Bronze, Manganese.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze (Tobin).
Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y

Brushes and Brooms.
Hendee Wire Brush Co., Milwaukee, Wis

Buckets, Rubber.
Cleveland Galvanizing Wks., Cleveland

Buggies.
Parry Mfg. Co., Indianapolis, Ind.

Builders' Hardware.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
Stanley Works, New Britain, Conn.
U. S. Steel Lock Co., Clinton, Iowa.

Bulldozers
Williams, White & Co., Moline, Ill

Burnt Leather.
Ensworth, L. L. & Son, Hartford, Conn.

Butchers' Tools.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Cash Recorders.
Hough Cash Recorder Co., Indian Orchard, Mass.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia, Pa.

Castings, Brass, Bronze and Copper.
American Pin Co., Waterbury, Conn
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Rowell, W. G. & Co., Bridgeport, Conn.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N. Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Cheney, S. & Son, Manlius, N. Y.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1131 Broadway, N. Y
Enterprise Foundry Co., Cincinnati, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McLain, H. Co., Canton, O.
McNeal Pipe & Foundry Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Phila. Roll & Mch. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, Ohio.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O.
Turner & Seymour Mfg. Co., Torrington, Conn.
West Side Foundry Co., Troy, N. Y.
Wetherill, Robert & Co., Chester Pa.
Youngstown Fdry. & Mach Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore, Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cements
Warner, Chas. Co., Wilmington, Del.

Cement Workers Tools.
Ideal Tool Co., Indianapolis, Ind.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co. Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Chemists.
Stillman & Hall, Ltd., 15 Wall St., N. Y.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.

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Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Cold Saws.
Lucas & Gliem, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 50 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood Mass.

Cork Screws.
Clough, Rockwell, Akron, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings, Compression.
Sennett Geo. B. Co., Youngstown, O.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas.
Paxson, J. W. Co., Philadelphia, Pa.

Cupolas, Hot Blast.
Whiting Foundry Equipment Co., Chicago, Ill.

Curry Combs.
Baker, L. B. Mfg. Co., Racine Junction, Wis.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.
Veeder Mfg. Co., Hartford, Conn.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Dies.
Bliss, E. W. Co., Brooklyn, N. Y.
Hey-Buddeus Mfg. Co., Brooklyn N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trenkewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester, Mass.

Display Doors.
Dempsey Mfg. Co., Cleveland, O.

Dog Collars.
Union Hardware Co., Torrington, Conn.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Bardsley, Jos., 147-151 Baxter St., N. Y.
Larimer Mfg. Co., Pittsburgh, Pa.
Pullman Sash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drill Grinders.
Eames, G. T. Co., Kalamazoo, Mich.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale Mch. Co., Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Grant Machine Tool Works, Cleveland, O
Lord Bros. Mfg. Co., Tiffin, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.
York, S. M. Co., Cleveland, O.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Dripping Pans.
Filigrove Bros. & Co., Canton, O.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
Kilborn & Bishop Co., New Haven, Conn
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Stiles, E. S. Press Co., Watertown, N. Y.
Williams, White & Co., Moline, Ill.
Woolley Fdry. & Mch. Works, Anderson, Ind.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.
Woolley Fdry. & Mch. Works, Anderson Ind.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Hanson & Van Winkle Co., Newark, N. J
Stewart Electrical Co., Cincinnati, O.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.
Zucker & Levett & Loeb Co., 526-540 W. 25th St., N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.
Oatman Bros., Medina, Ohio.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass

Electrical Machinery.
Stewart Electrical Co., Cincinnati, O.

Electrical Repairing.
Cleveland Armature Works, Cleveland, Ohio.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.
Westingh use Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Penn, Ind.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engine and Boiler Supplies.
Sherwood Mfg. Co., Buffalo, N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
New Castle Engineering Works, Pittsburgh, Pa.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Sague, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Mietz, Aug., 128-138 Mott St., N. Y.
New Era Iron Works, Dayton, Ohio.
Palmer, Bros., Mianus, Conn.
Thompson, J. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Lane & Bodley Co., Cincinnati, O.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
Seaman, D. C. & Co., Philadelphia, Pa.
Steward & Romaine Mfg. Co., Phila., Pa.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exporters.
Markt & Co., Ltd., 193-194 West St., N. Y

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets.
Litchfield, J. M., Brooklyn, N. Y.
McKenna, A. & T., Pittsburgh, Pa.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cookers.
Electric Oil Stove Co., Homer, Mich.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn

Fence Posts.
Kokomo Fence Mch. Co., Kokomo, Ind.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Bolles, J. E. Iron & Wire Works, Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Detroit Fence Co., Detroit, Mich.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago, Ill.
Kitselman Bros., Ridgeville, Ind.
Kokomo Fence Machine Co., Kokomo, Ind.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Fencing Machines.
Columbian Fence Co., Richmond, Ind.
Kitselman Bros., Ridgeville, Ind.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
McLain, E. S. & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Philadelphia, Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Floor Scrapers.
Osborn Mfg. Co., Cleveland, O.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
Sherwood Mfg. Co., Buffalo, N. Y

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Fly Traps
Meyers, Fred. J. Mfg. Co., Hamilton, O.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Foot Warmers.
Chicago Foot Warmer Co., Chicago, Ill.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M., Tolland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glass Cutting Boards.
Lufkin Rule Co., Saginaw, Mich.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Grass Hooks.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Eames, G. T, Co., Kalamazoo, Mich.
Florence Machine Co., Florence, Mass.
Landis Tool Co., Waynesboro, Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

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Grindstones.
Cleveland Stone Co., Cleveland, O.

Grindstone Hangers.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Gun Implements.
Union Hardware Co., Torrington, Conn

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Palmer, I. E., Middletown, Conn

Hand Milling Machines.
Costlio, J. E. Machine Works, Brooklyn N. Y.

Hangers, Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield, Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Parker, Cnas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Sickels & Nutting Co., 35 Barclay St., N.Y
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain.
North Bros. Mfg. Co., Philadelphia, Pa.
Parks & Parks, Troy, N. Y.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hog Rings.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.

Hoists, Air.
Pedrick & Ayer Co., Philadelphia, Pa.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila., Pa.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rome Mfg. Co., Rome, N. Y.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich

Hose Couplings, Air.
Pedrick & Ayer Co., Philadelphia, Pa.

Hose Menders.
Crescent Brass & Iron Co., Detroit, Mich
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Household Specialties.
Parks & Parks, Troy, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Breaking Machines.
Wharton, J. S. Lovering, Philadelphia.

Ice Cream Dishes.
Clad, V. & Sons, Phil[illegible], Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Creepers.
Stimpson, Edw. B. & Son, 51 Spruce St., N. Y.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.
National Injector Co., Cleveland, Ohio.
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lutenberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 29 B'way N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O.

Job Lots, Hardware.
Browne & Mansfield, 245 Broadway, N.Y.
Chicago House Wrecking Co., Chicago, Ill.

Joist Hanger.
Von Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Keys, Machine.
Morton Mfg. Co., Muskegon Heights, Mich.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Bradford Mill Co., Cincinnati, O.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Grant Machine Tool Works, Cleveland, O
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Windsor Machine Co., Windsor, Vt.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Mowers.
Lawson Mfg. Co., Milwaukee, Wis.
New Mfg. Co., Canton, Ohio.
Phila Lawn Mower Co., Phila., Pa.

Lawn Mower Sharpeners.
Wilcox Mfg. Co., Aurora, Ill.

Lawn Rakes.
Graham, John H. & Co., 113 Chambers St., N. Y.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Fan Lawn Sprinkler Co., San Francisco, Ill.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hdw. Co., Reading, Pa.
U. S. Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N.J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Affleck, Geo. E., 109 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Farrel Foundry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Poulterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Thomas & Lowe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Woolley Fdry. & Mch. Works, Anderson, Ind.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machinery Woodworking.
Fay, J. A. & Co., Cincinnati, Ohio.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago, Ill.
Hubbell, Harvey, Bridgeport, Conn.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester
Rhode Island Tool Co., Providence, R. I
Worcester Mch. Screw Co., Worcester

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools,—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Man Hole Forming Tools.
Haworth Mfg. Co., Liberty, Ind.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.
Thomas, R., Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y

Metal Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y
Lewisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Machines.
Adams Co., Dubuque, Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Grant Machine Tool Works, Cleveland, O
Lucas & Gilem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mill Supplies.
Bliss, R. Mfg. Co., Pawtucket, R. I.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill
Howard & Morse, 45 Fulton St., N. Y.

Molding Machines.
Pridmore, Henry E., Chicago, Ill.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Electric.
Stewart Electrical Co., Cincinnati, O.

Motors, Petroleum.
Daimler Mfg. Co., Long Island City, N.Y.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Nail Clippers.
Cook, H. C. & Co., Ansonia, Conn.

Nail Machinery.
Alexander & McLaughlin, Erie, Pa.
Atherton, Jesse, Auburn, R. I.
Crescent Mfg. Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Hagen & Reid, Troy, N. Y.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Parkdale, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J
Zucker & Levett & Loeb Co., 526-530 W. 25th St., N. Y.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Burners.
Brown, W. J., Philadelphia, Pa.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester

Oil Heaters.—*See Oil Stoves*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Balls.
Woodruff, Walter W. & Sons, Mt. Carmel Conn.

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Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paris Exhibition.
Markt & Co., 142 to 148 West St., N.Y.

Patent Solicitors.
Donaldson, W. & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. F., Washington, D. C.
Stocking, E. B., Washington, D. C.

Pattern Letters.
St. Louis Electrotype Foundry, St. Louis.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Forceps.
Reimers, J. F. & Co., Davenport, Iowa.

Pig Iron.
Houston, C. R. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
Millar, C. & Son, Utica, N. Y.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Stanley Rule & Level Co., N.Y.

Planers.
Baird, H. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Niles Tool Works, Hamilton, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Poultry Fencing.
De Kalb Fence Co., De Kalb, Ill.

Poultry Settings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland, Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dieneit & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. S., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg. Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Phila. Mch. Tool Co., Philadelphia, Pa.
Stiles, E. S. Press Co., Watertown, N. Y.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
Wrightsville Hdw. Co., Wrightsville, Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.

Pulley Lathes.
Woods, T. B. Sons, Chambersburg, Pa.

Pump Buckets.
Freshour, H. C., Chicago, Ill.

Pump Chains.
Cleveland Galvanizing Wks., Cleveland.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
Red Jacket Mfg. Co., Davenport, Ia.
St. Joseph Pump & Mfg. Co., St. Joseph Mo.

Punches, Conductors.
Meyers, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Mersick, C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg. Co., Fond du Lac, Wis
Gurney Refrigerator Co., Fond du Lac, Wis.
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark, N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jones & Laughlins, Ltd. Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. P. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Roasters and Bakers.
Shepard, Sidney & Co., Buffalo, N. Y.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry. & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper
Thompson, Hugh L., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry. & Mch. Co., Ansonia, Conn.
Frank Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Phila. Roll & Mch. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, Ohio.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Shield.
Ironsides Co., Columbus, Ohio.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.
Woods, T. B. Sons, Chambersburg, Pa.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Lufkin Rule Co., Saginaw, Mich.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Safes.
Fischer's, John A. Sons, Covington, Ky.

Sample Holders.
Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.
Ward, Edgar T. & Sons, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Lansingburgh, N. Y.
Grand Rapids Sash Pulley Co., Grand Rapids, Mich.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Osborne, D. M. & Co. Auburn, N. Y.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O.
Syracuse Chilled Plow Co., Syracuse, N.Y

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
New England Specialty Co., No Easton, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.
Sawyer Tool Co., Fitchburg, Mass.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co. Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co. Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Cumberland Iron & Steel Shafting Co., Cumberland Md.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phoenix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shelving.
Warren, J. D. Mfg. Co., Chicago, Ill.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Union Hardware Co., Torrington, Conn.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners.
Union Hardware Co., Torrington, Conn.

Slaw Cutters.
Disston, Henry & Sons Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City N. J.

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Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialty Manufacturers.
American Pin Co., Waterbury, Conn.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Hall, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Blake, Stoddard & Kendall, Boston, Mass.

Sprayers.
Eureka Co., Rock Falls, Ill.

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O.
Dunbar Bros., Bristol, Conn.
Lord Bros. Mfg. Co., Tilton, N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Smith Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co., Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Hdw. Co., Cleveland, O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hatheway Mfg. Co., Bridgeport, Conn.
Houghton & Buxton Mfg. Co., Worcester Mass.
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.

Steam Traps.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Flanges, Weldless.
Latrobe Steel Co., Philadelphia, Pa.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Cumberland Iron & Steel shafting Co., Cumberland, Md.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Likens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
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Whitney, A. R. & Co., 29 Broadway, N. Y.
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Selden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Dunman & Davis, 85-87 John St., N. Y.

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Ness, Geo. M., Jr., 61 Fulton St., N. Y.
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American Tin Plate Co., Chicago, Ill.

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Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
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Bates Machine Co., Joliet, Ill.
Morgan Construction Co., Worcester.
Mossberg & Granville Mfg. Co., Providence, R. I.

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Wickwire Bros., Cortlandt, N. Y.
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American Wire Goods Co., Lowell, Mass.
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Bates Machine Co., Joliet, Ill.
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Nilson, A. H. Mch. Co., Bridgeport, Conn.
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American Steel & Wire Co., Chicago, Ill.
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Pittsburgh Wire Co., Pittsburgh, Pa.
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Whitney, A. R. & Co., 29 Broadway, N. Y.

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Bates Machine Co., Joliet, Ill.
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Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

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Fay, J. A. & Co..... 54
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Fischer's, Jno. A. Son.....123
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North Carolina Mica Co. 119
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Phila. Roll & Machine Co. 28
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Phillips, E. & Sons 33
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Pittsburgh Wire Co. 13
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Shelton Co. 14
Shepard, Sidney & Co. 98
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Sherwood Mfg. Co. 36
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Shultz Belting Co. 1
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Sickels & Nutting Co. 92
Sidney Steel Scraper Co. 126
Sigourney Tool Co. 59
Silver Lake Co. 114
Silver Mfg. Co. 58
Simonds Mfg. Co. 86
Singer, Nimick & Co. 25
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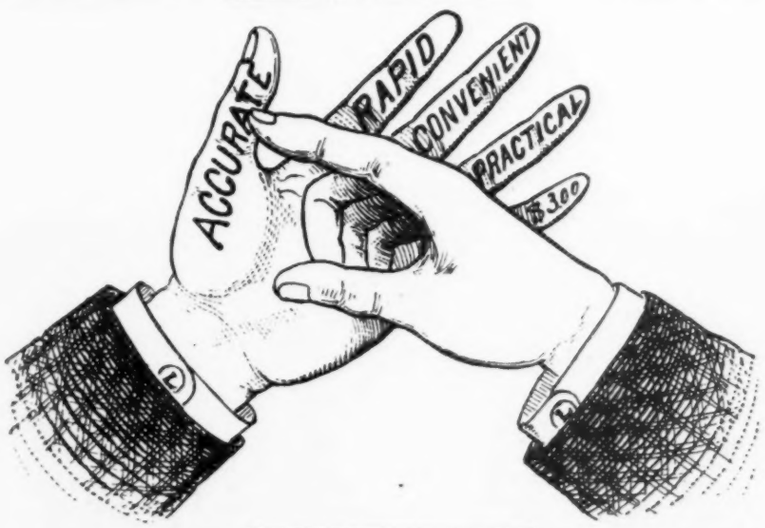

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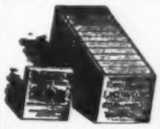

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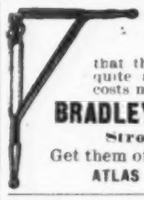

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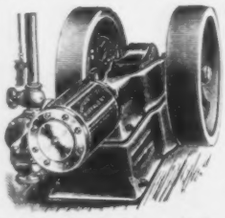
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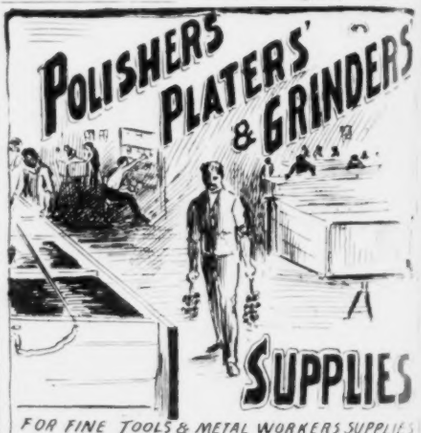

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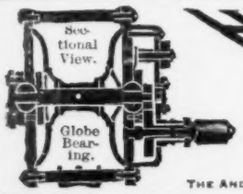

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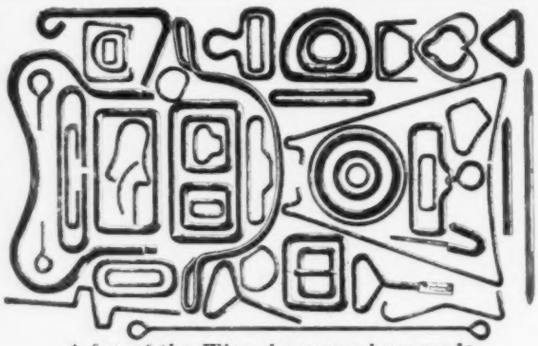

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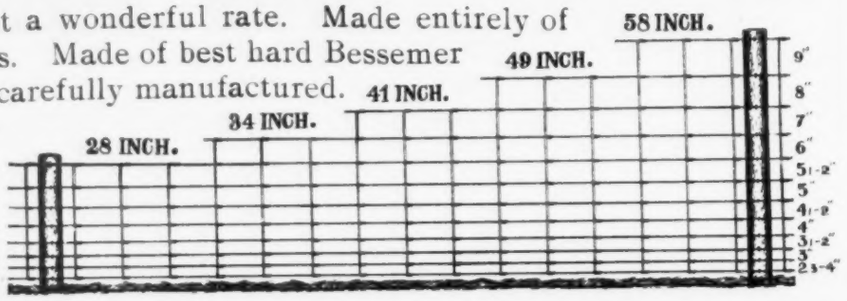

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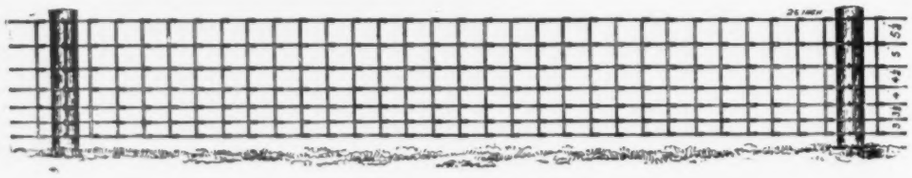

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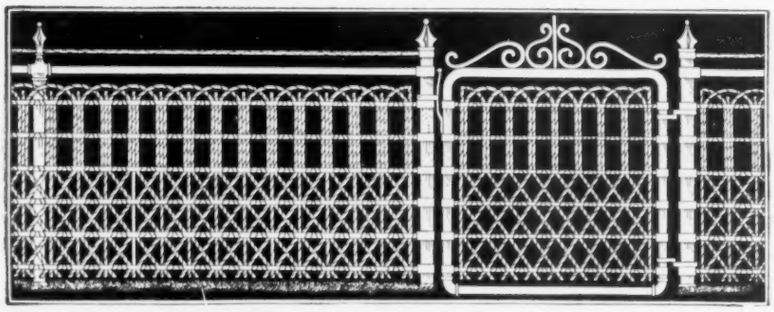

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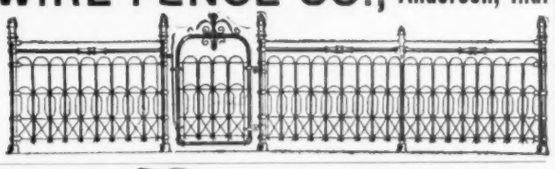

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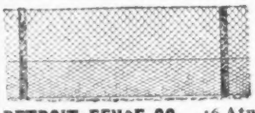

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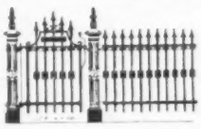

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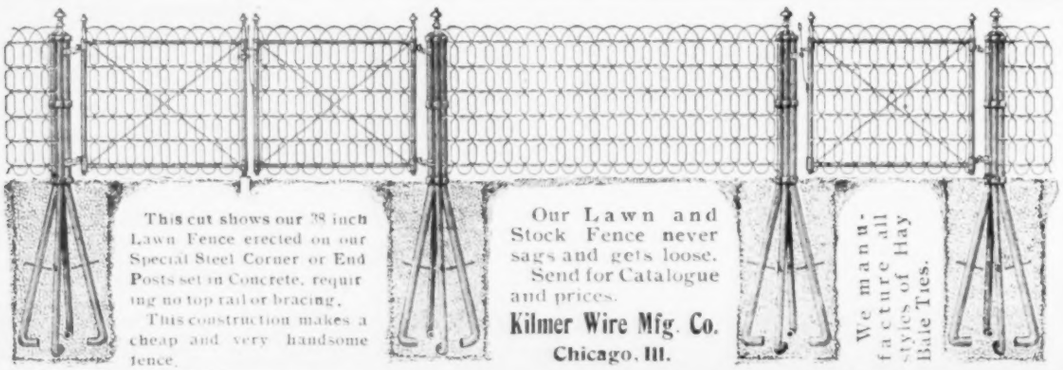
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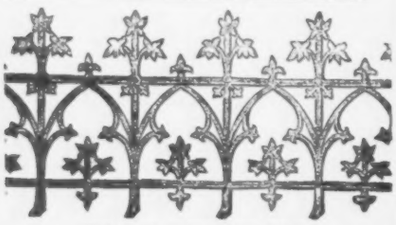
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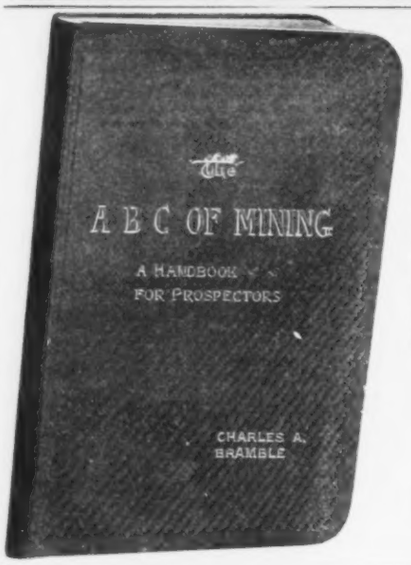

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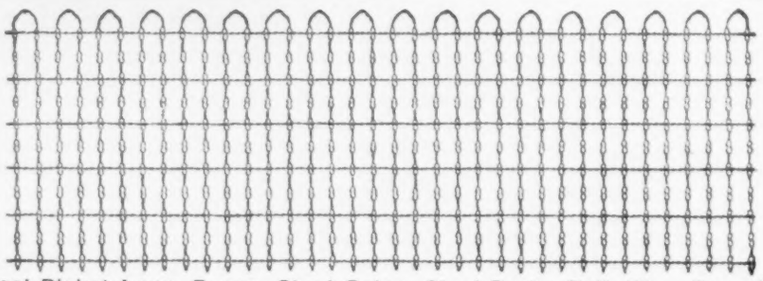
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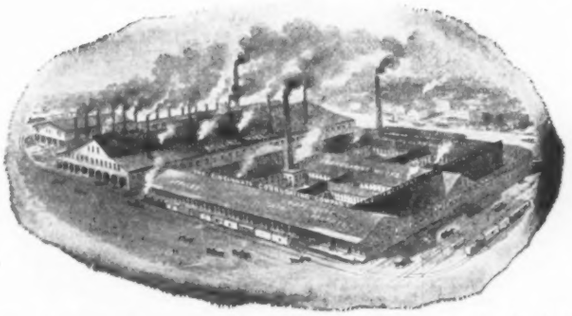

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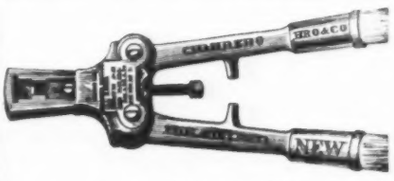

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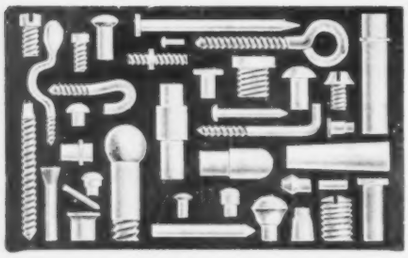

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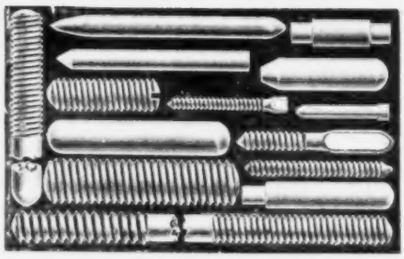

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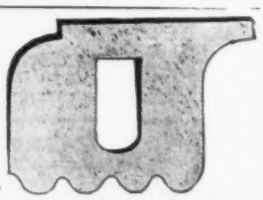

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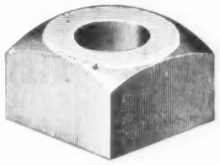

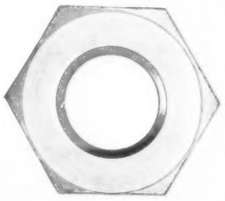

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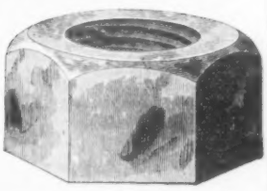

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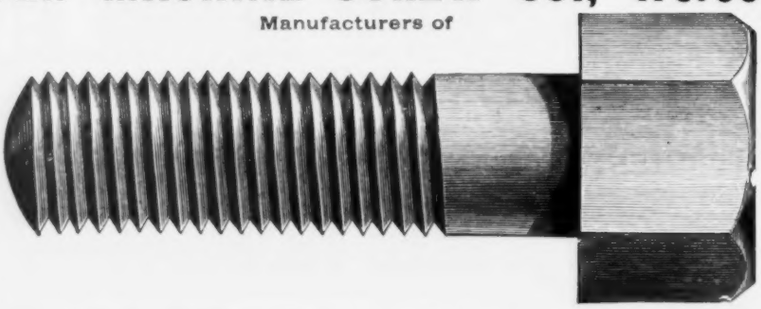

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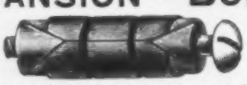

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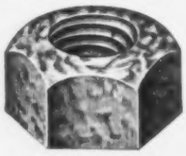

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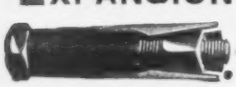

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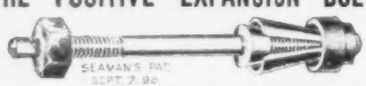

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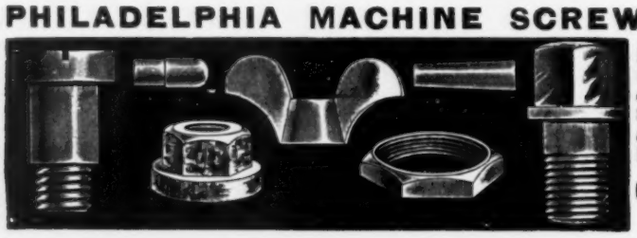

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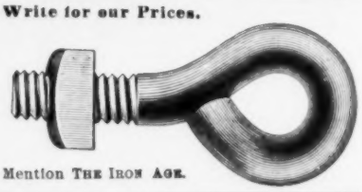

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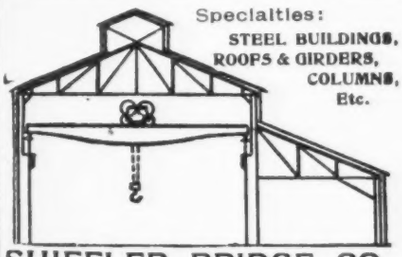

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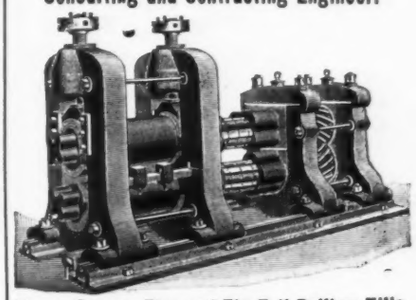

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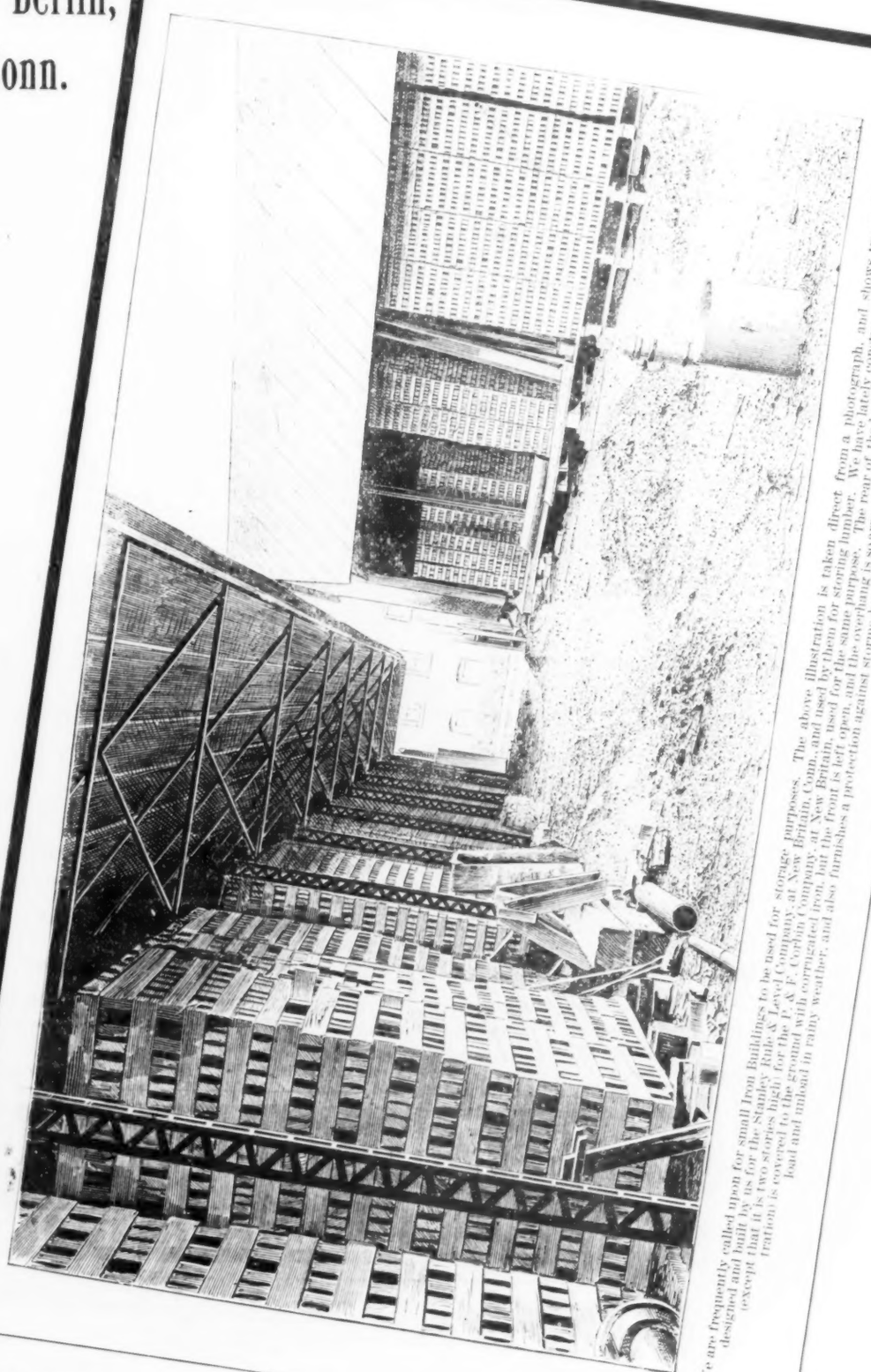

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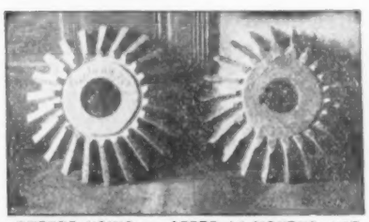

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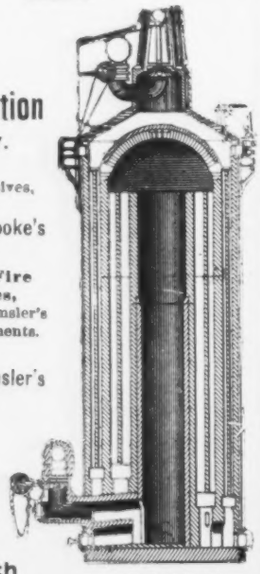

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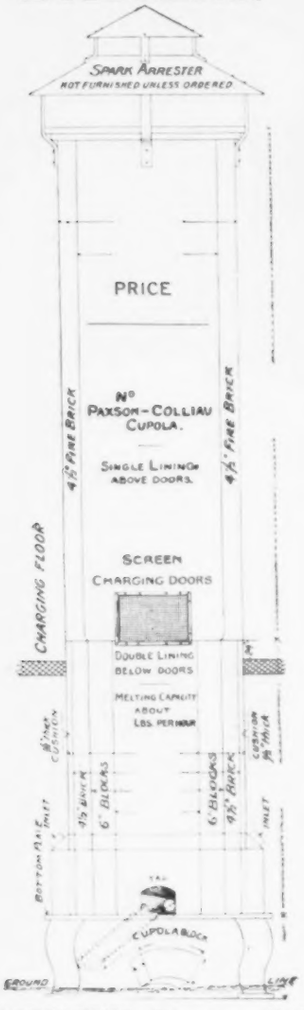

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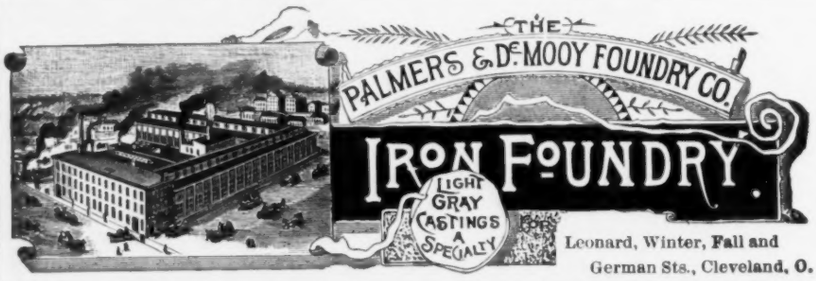

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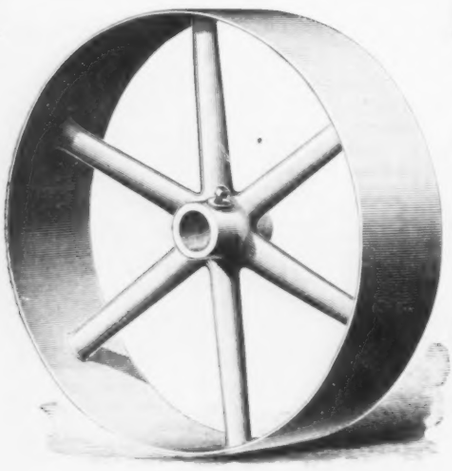

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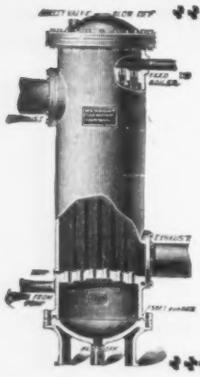

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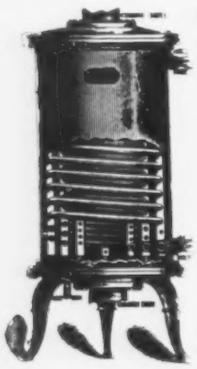

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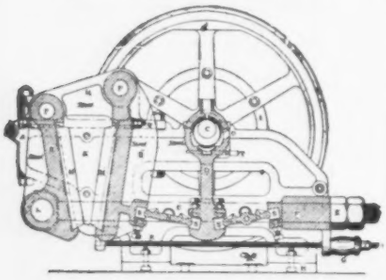

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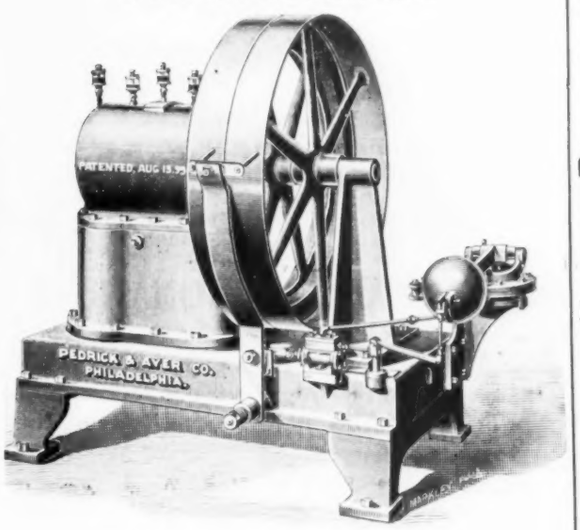

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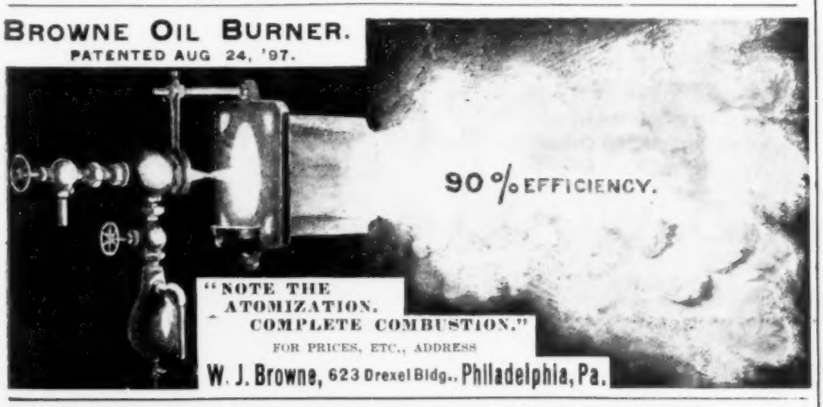

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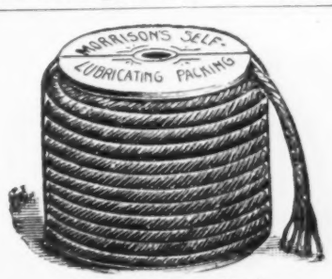

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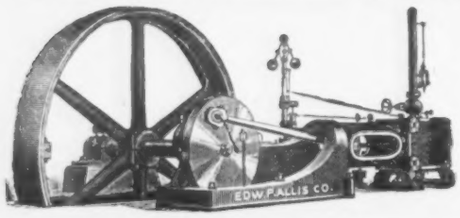

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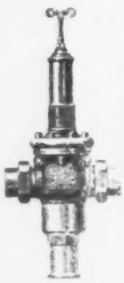

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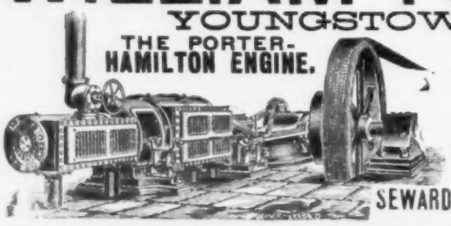

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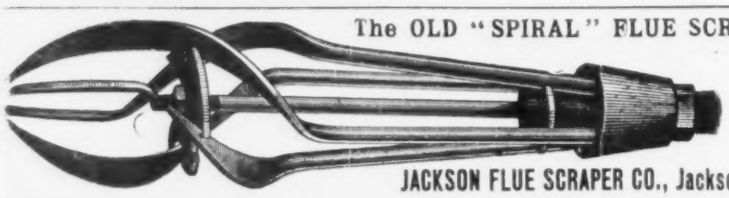

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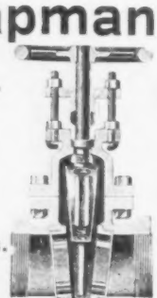

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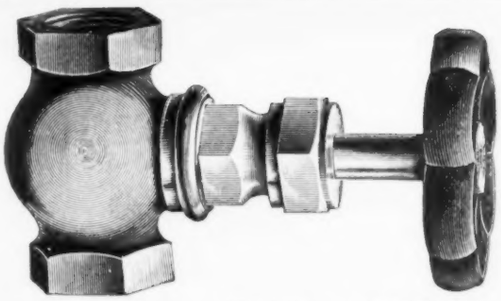

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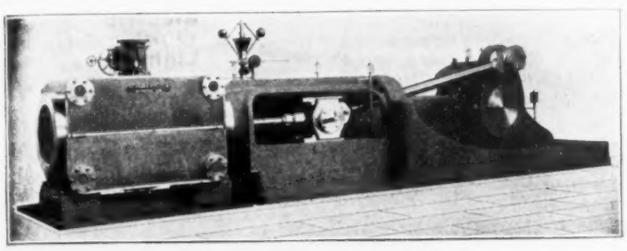

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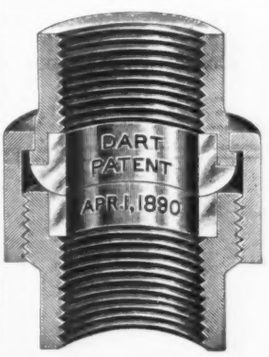

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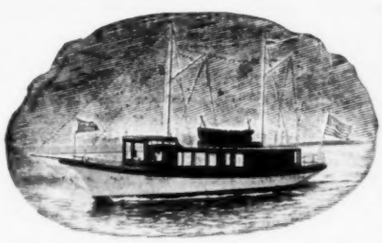

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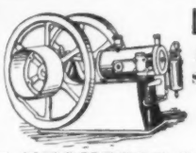

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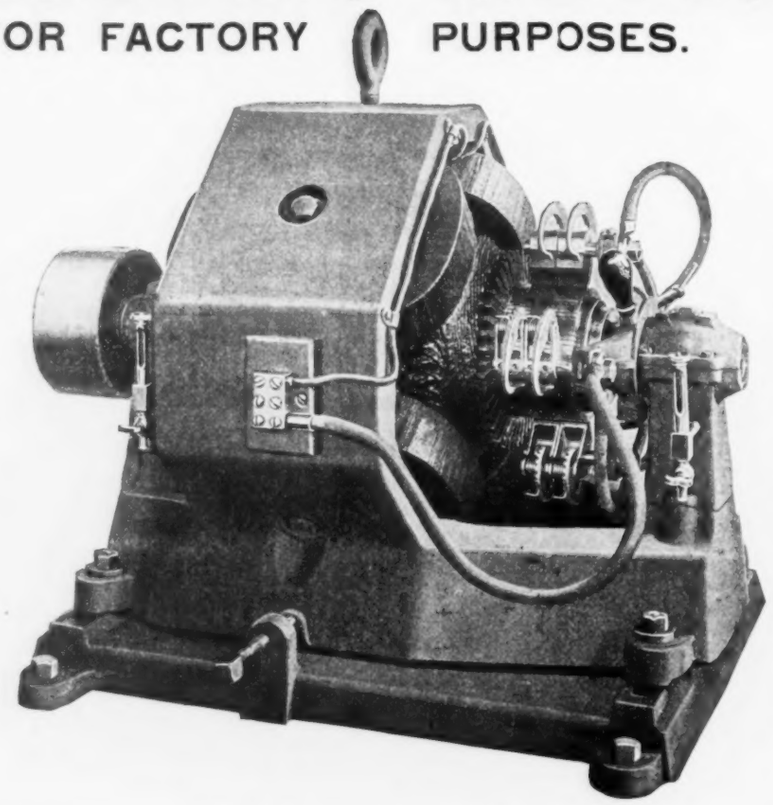
Write us about using Electric Power in your factory. We will give you an honest report on the economy of it.



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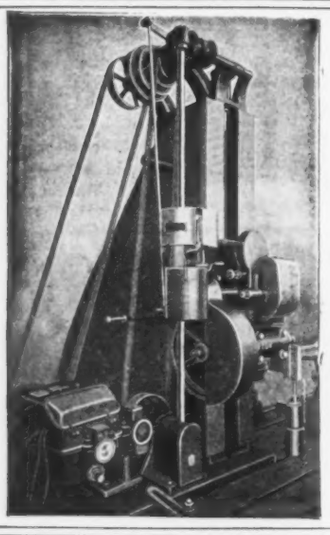

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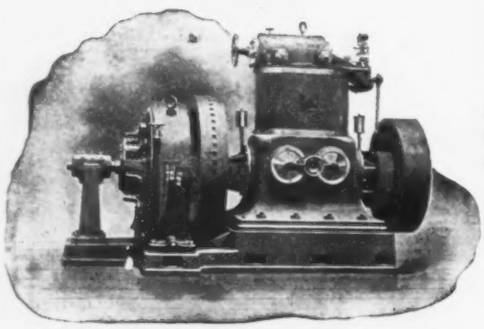

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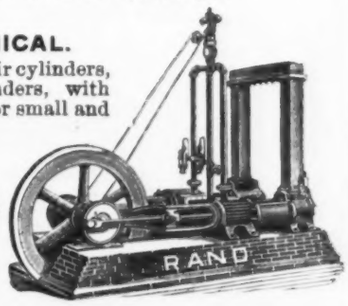

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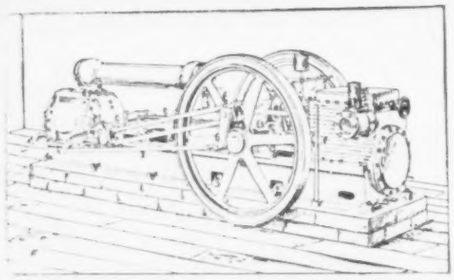

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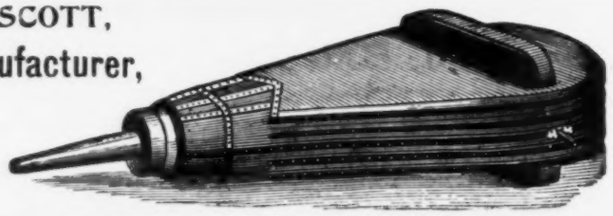

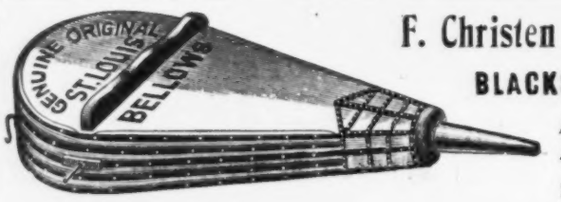

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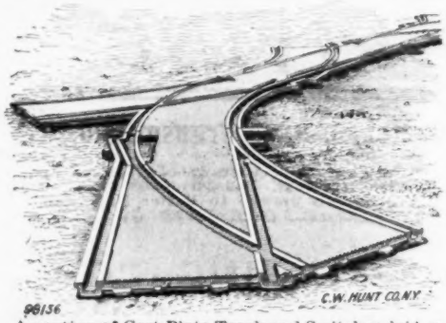

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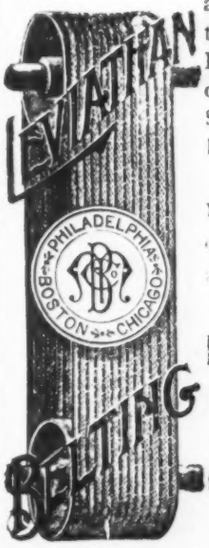

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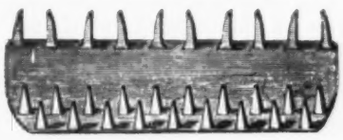

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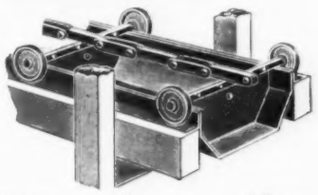

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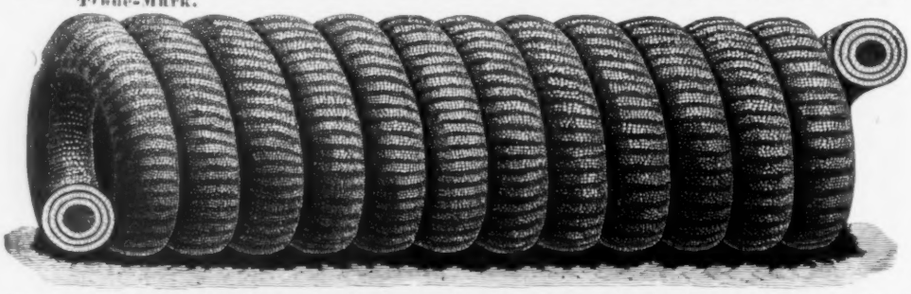

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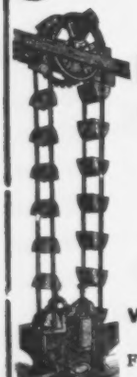

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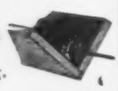

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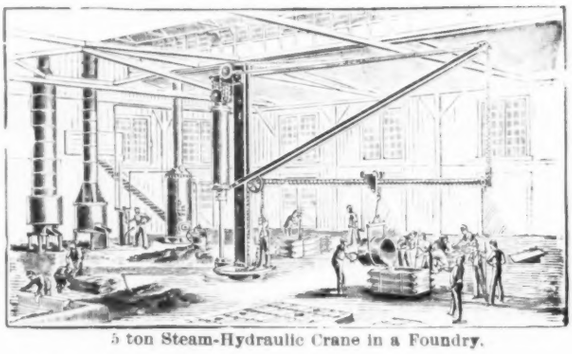

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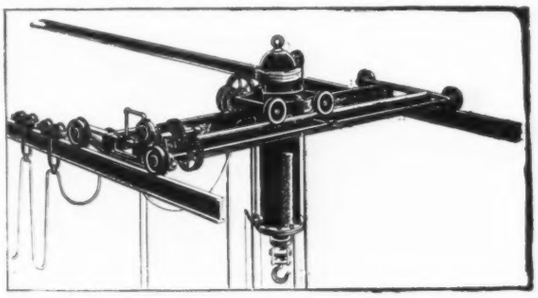

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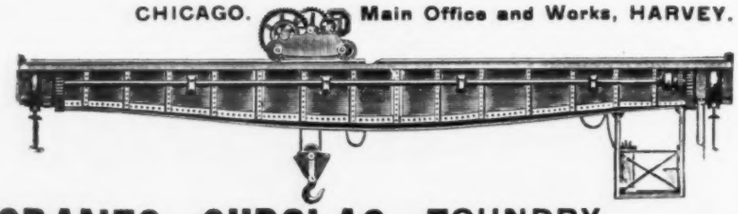

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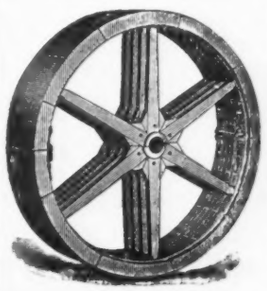

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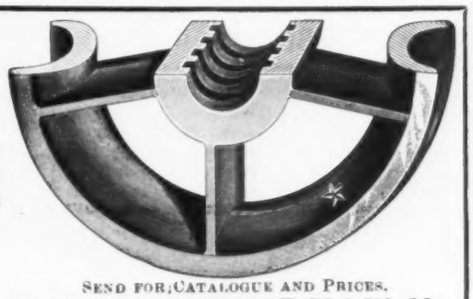

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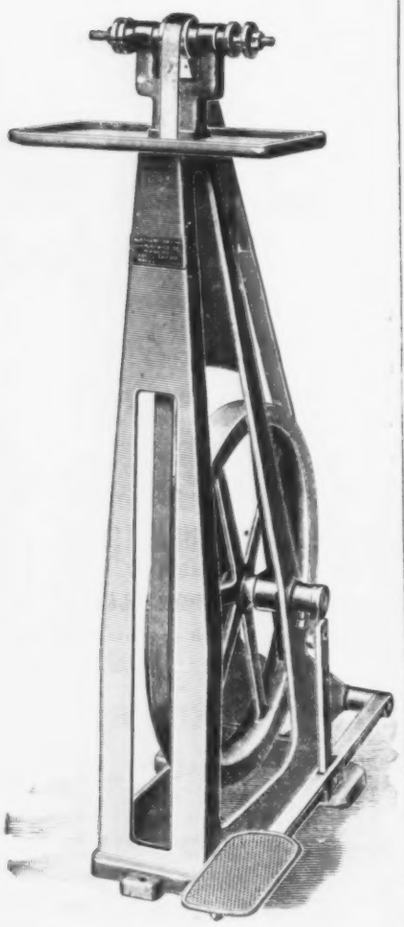

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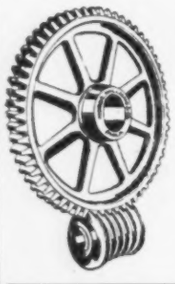

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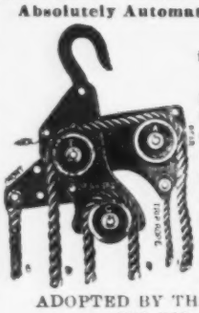

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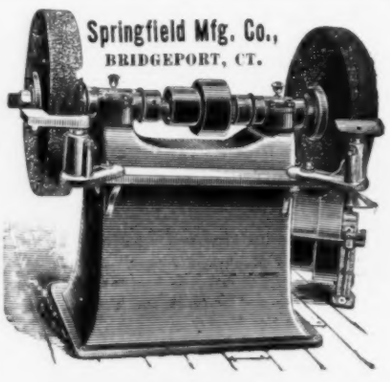

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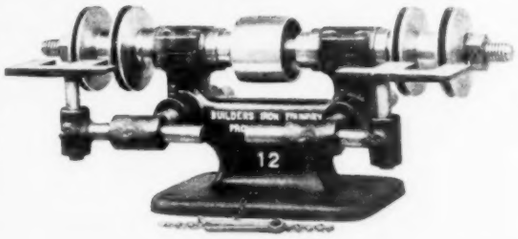

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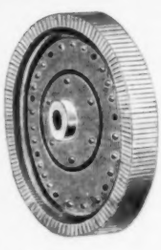

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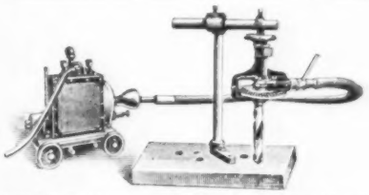

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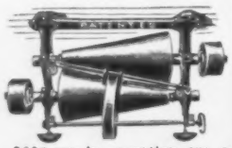

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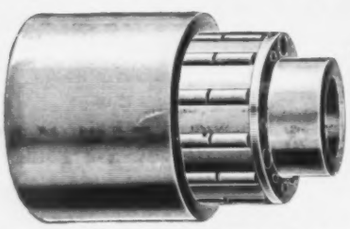

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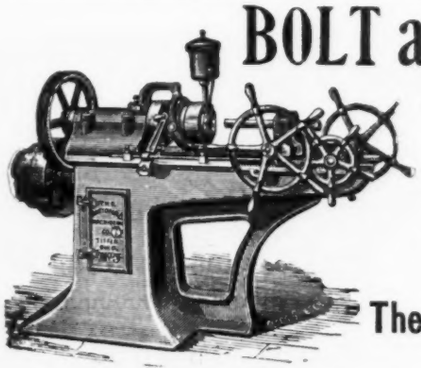

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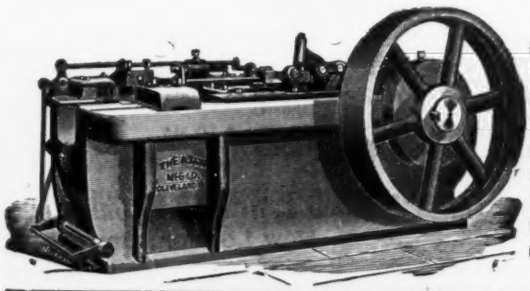

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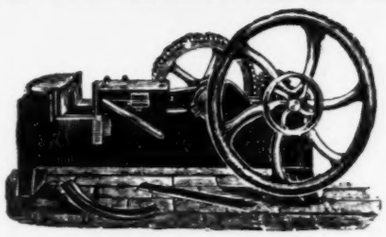

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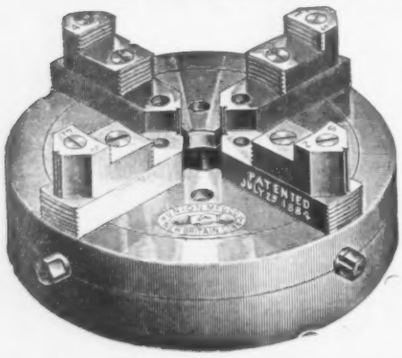

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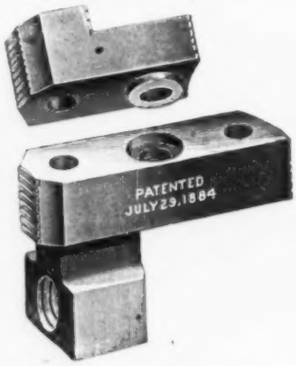

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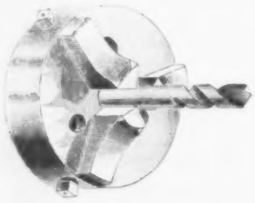

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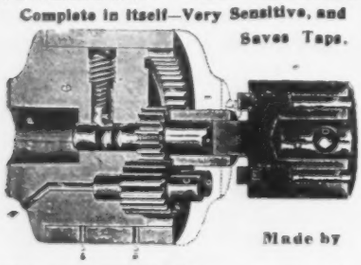

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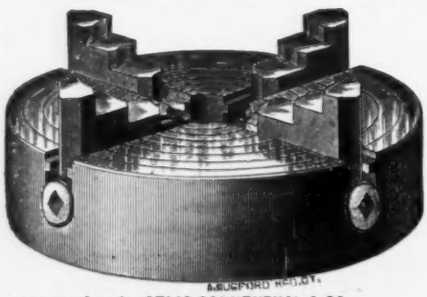

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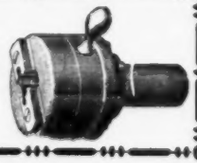

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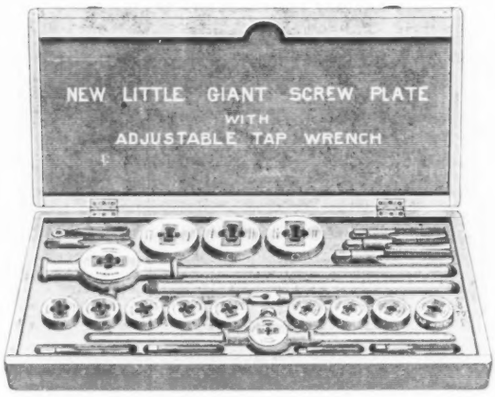

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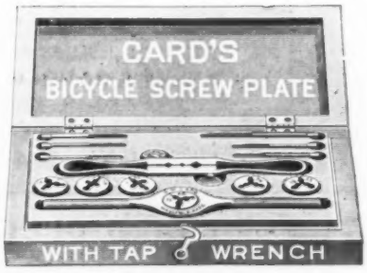

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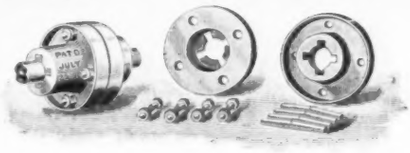

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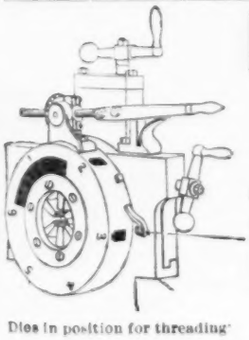

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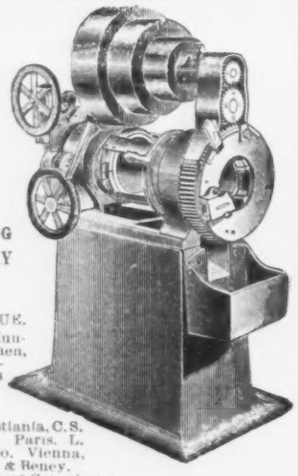

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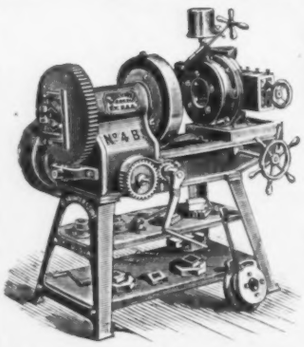

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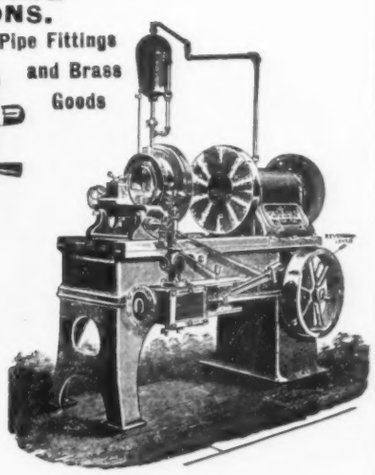

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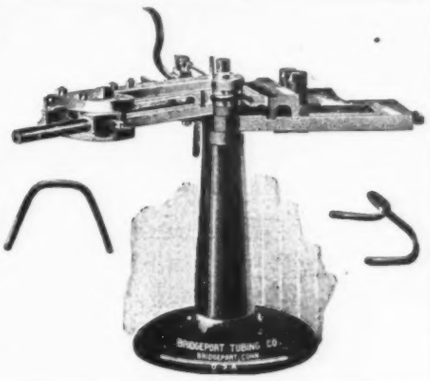

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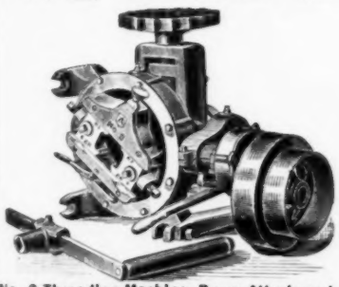

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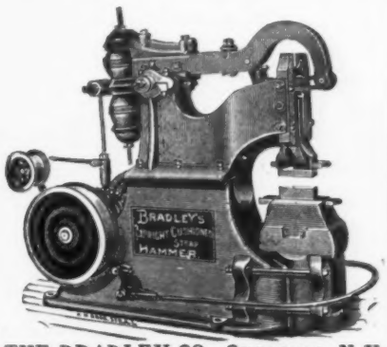

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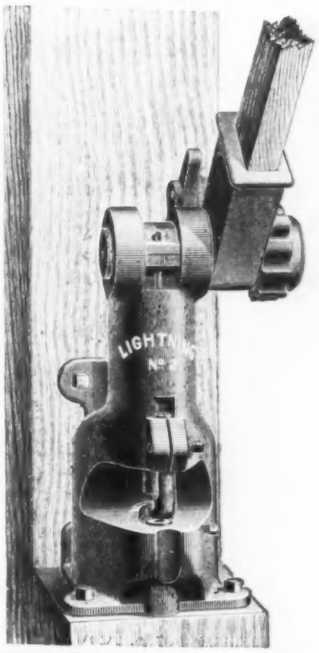

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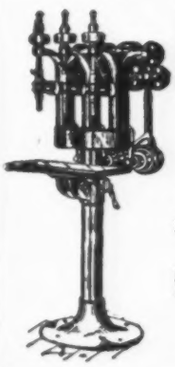

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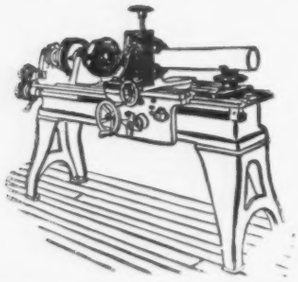

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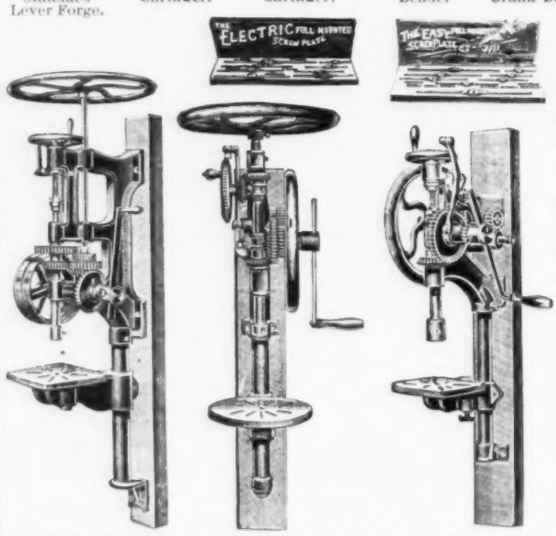

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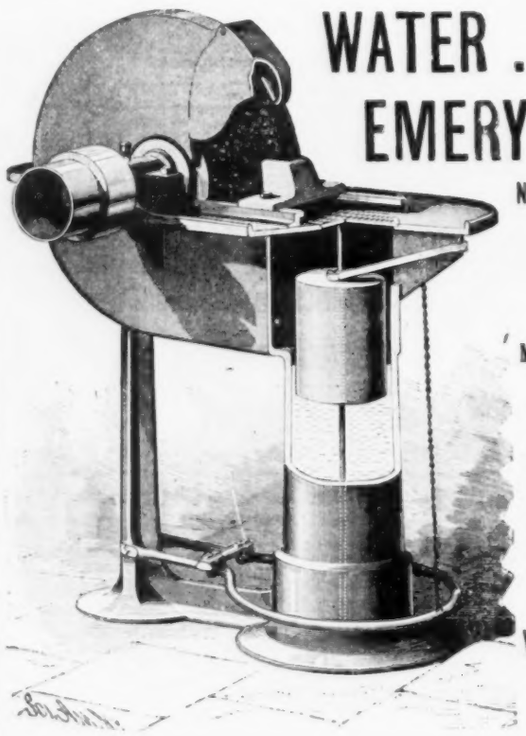

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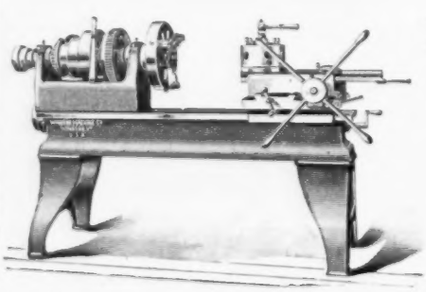

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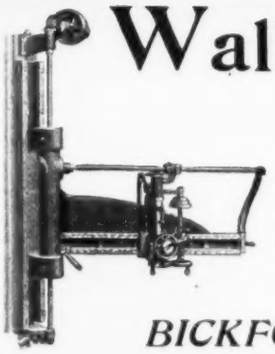

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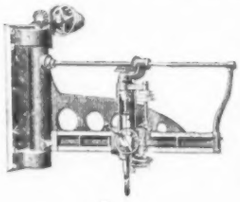

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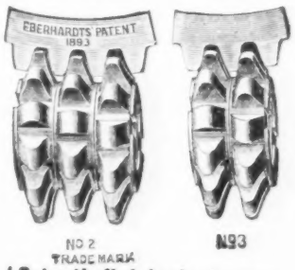

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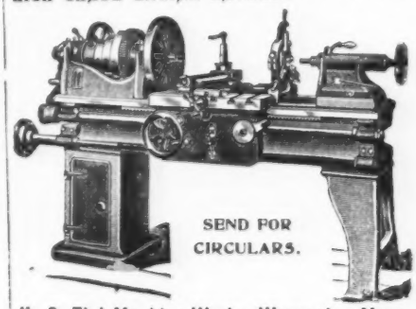

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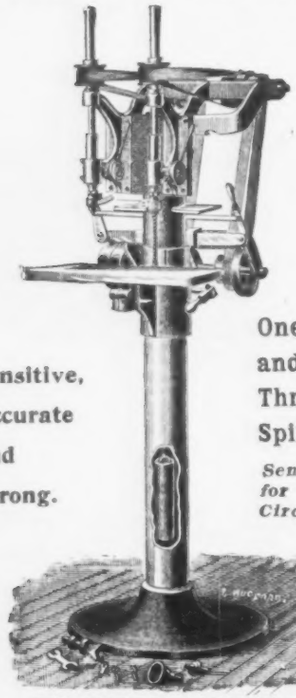

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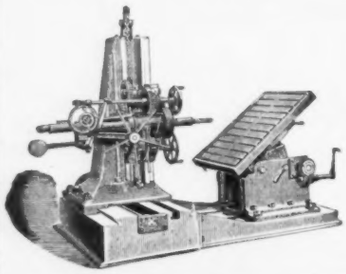

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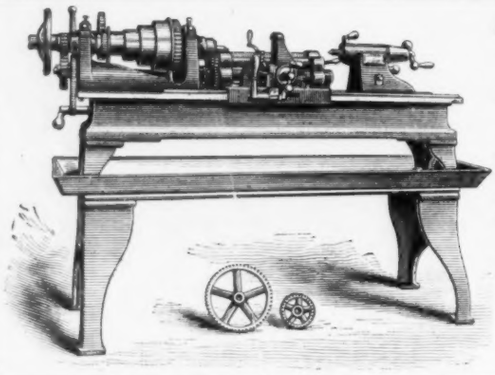

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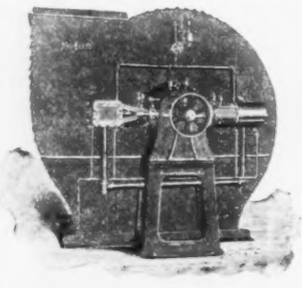

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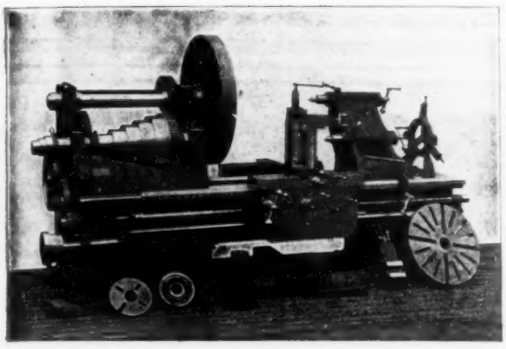

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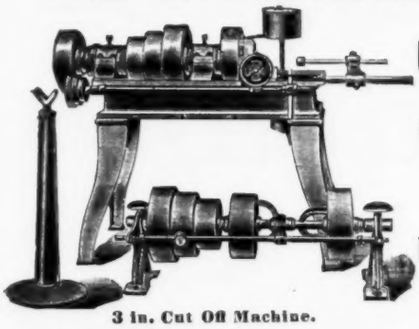

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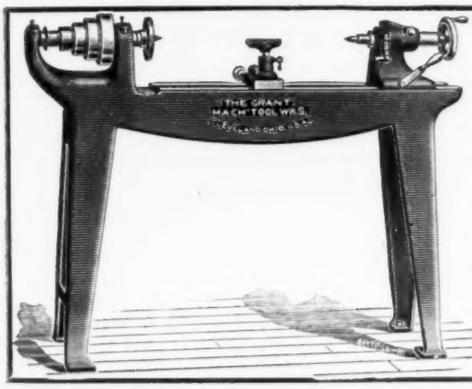

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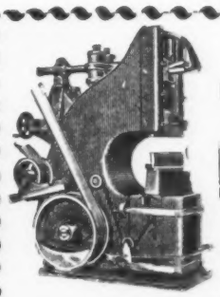

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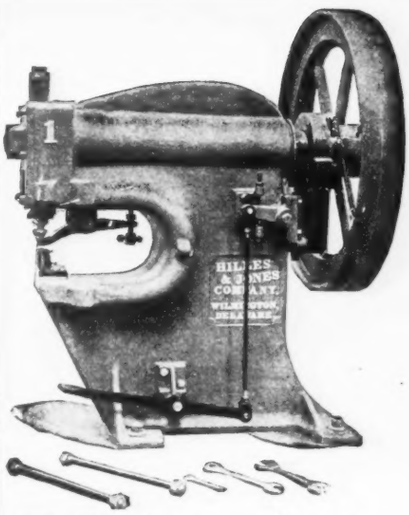

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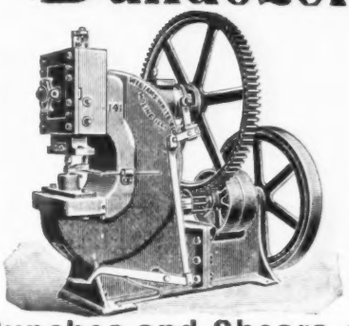

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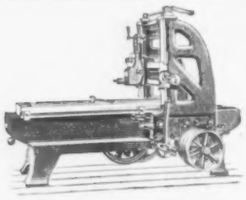

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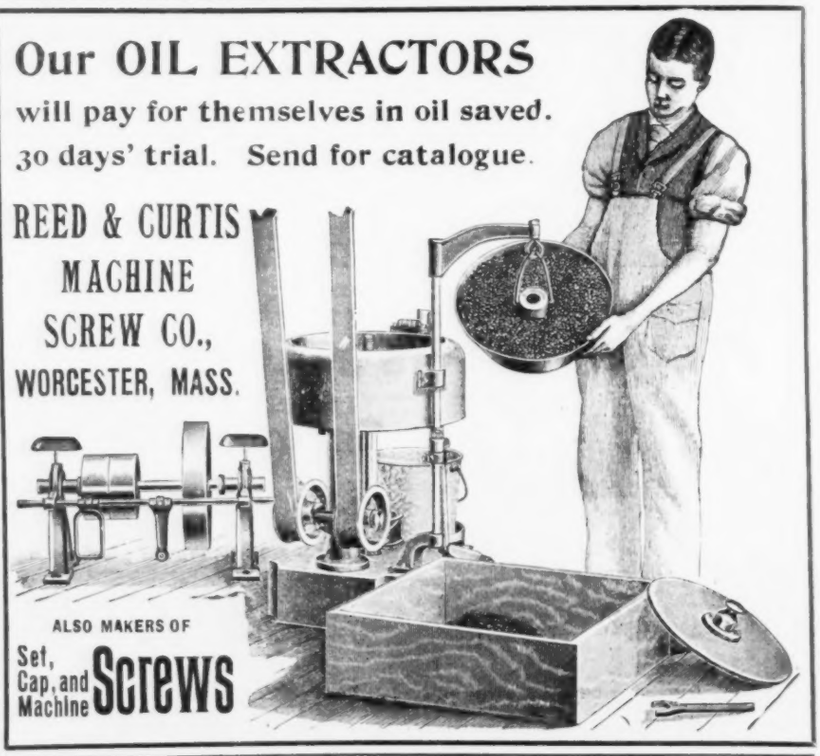

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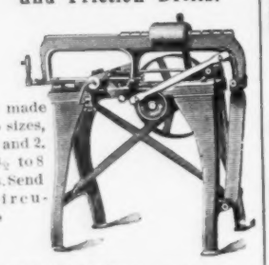

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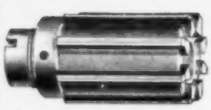

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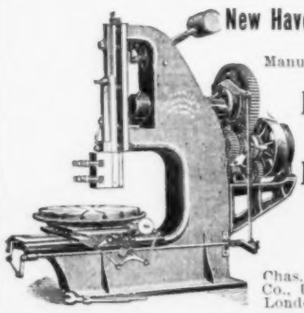

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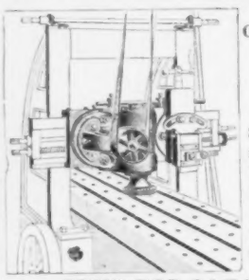

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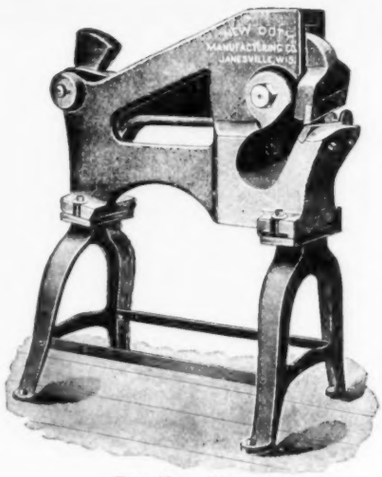

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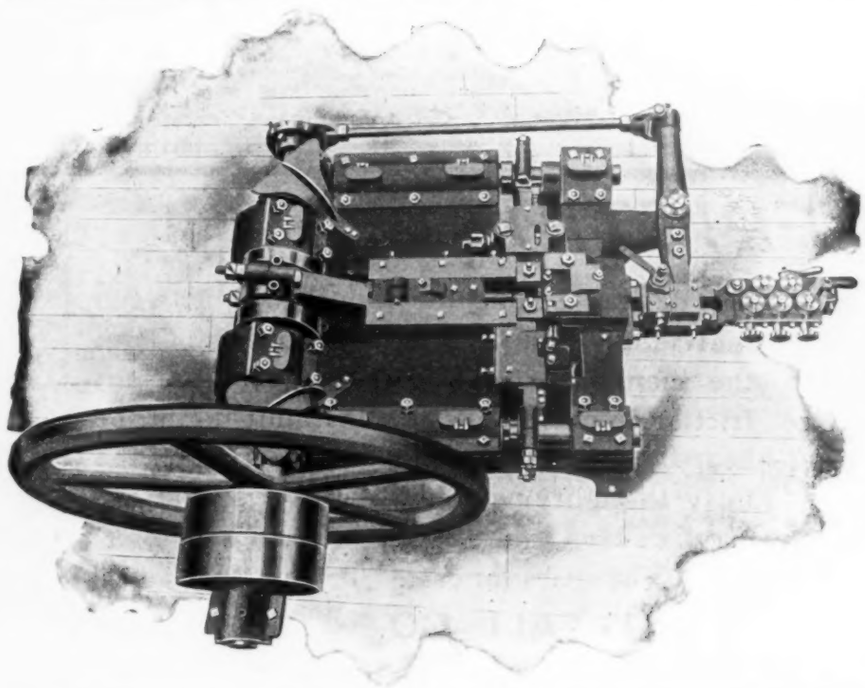

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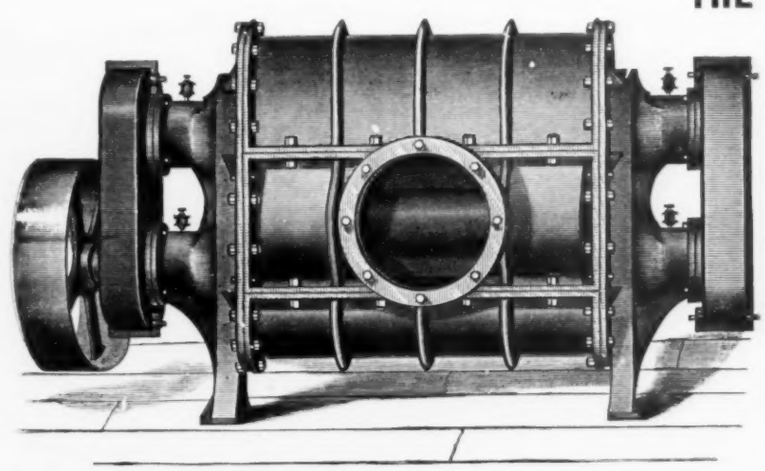

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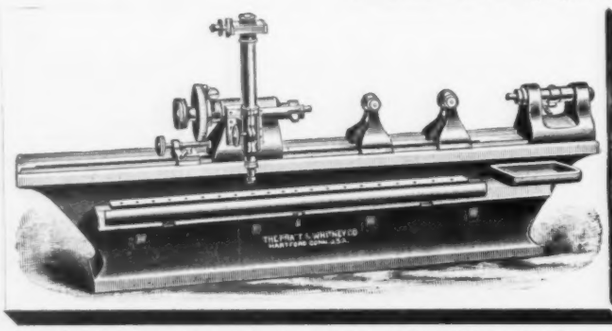

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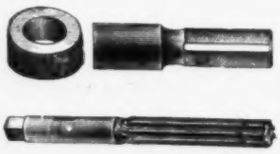

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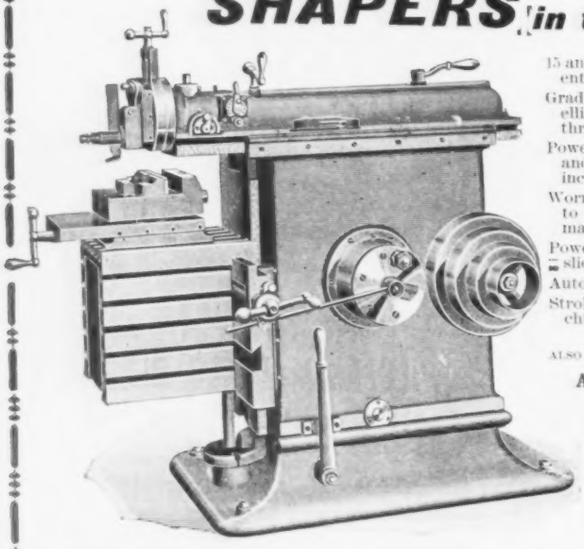

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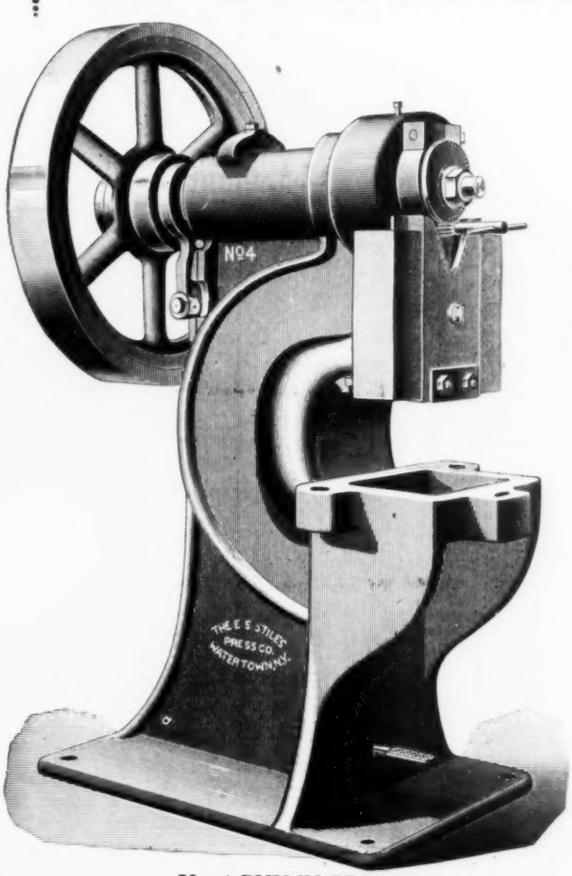

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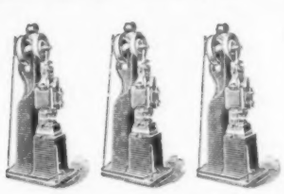

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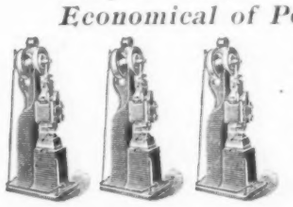

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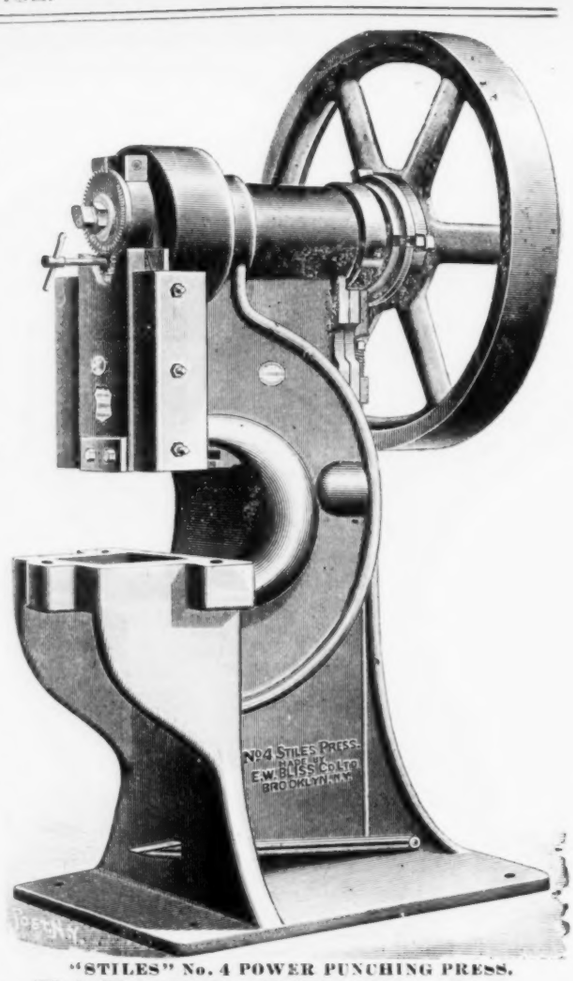

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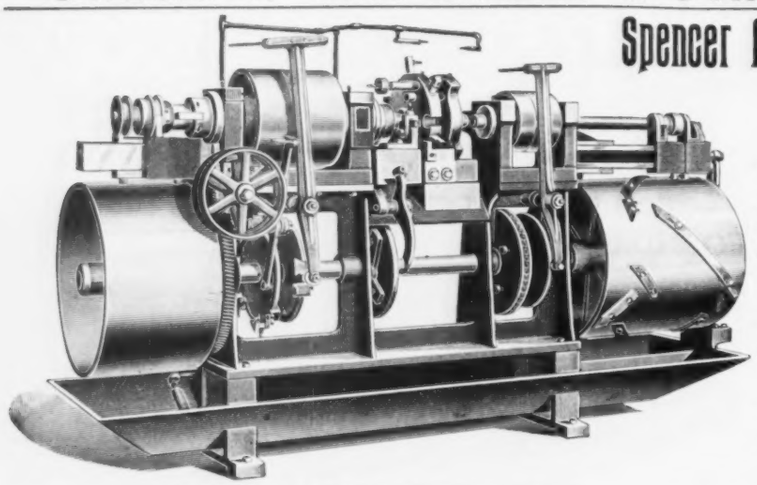

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Spencer Automatic Machine Screw Co.,

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We build automatic screw machines in three sizes and two styles.

We have each of these sizes and styles in stock, and can therefore guarantee prompt delivery.

We shall be pleased to mail a catalogue to any address. In our catalogue you will find complete descriptions and illustrations.

We can also mail samples of work which we are daily turning out on these machines at our own works.

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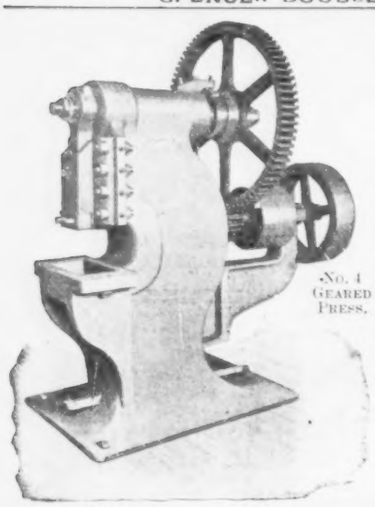

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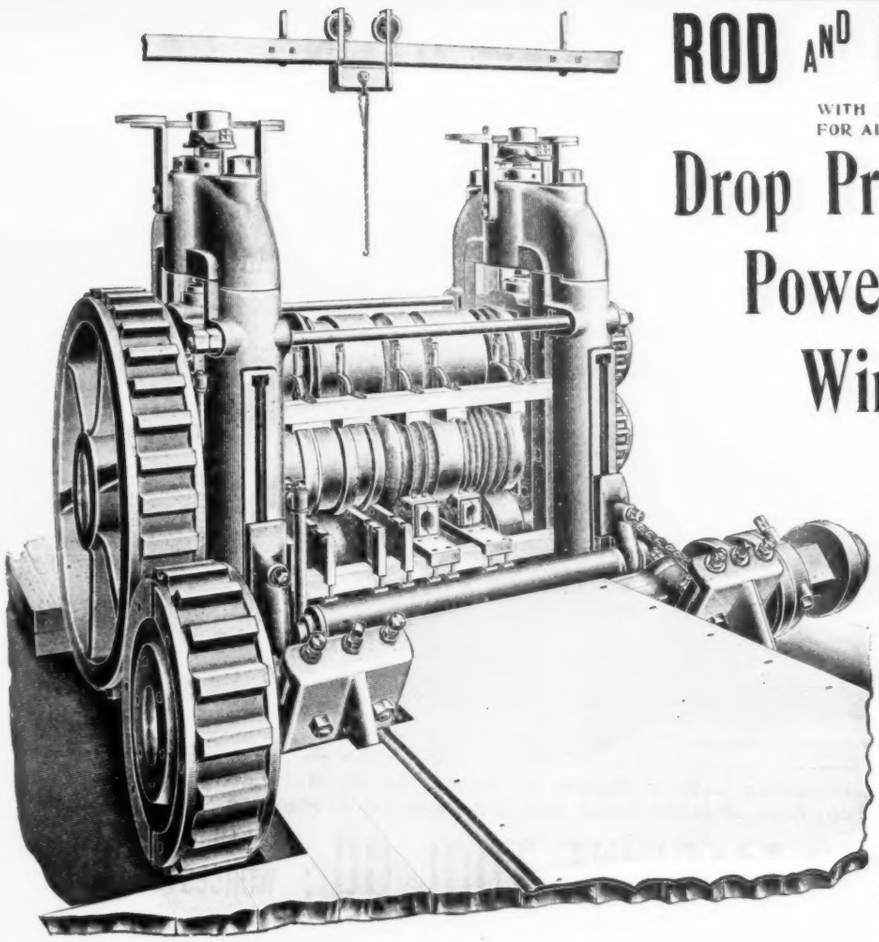

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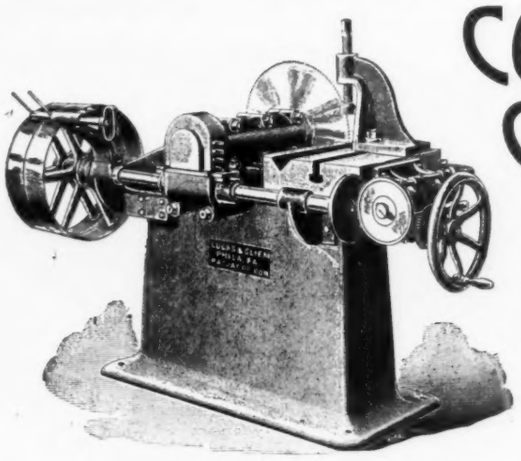

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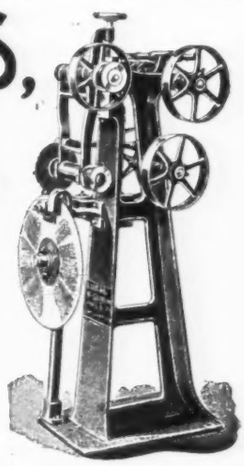

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WITH RUBBER CUSHIONED JAWS.

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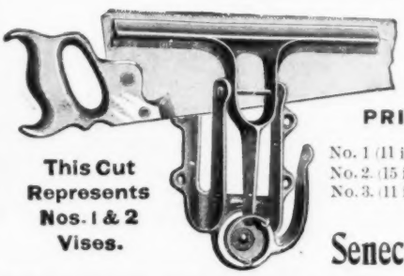

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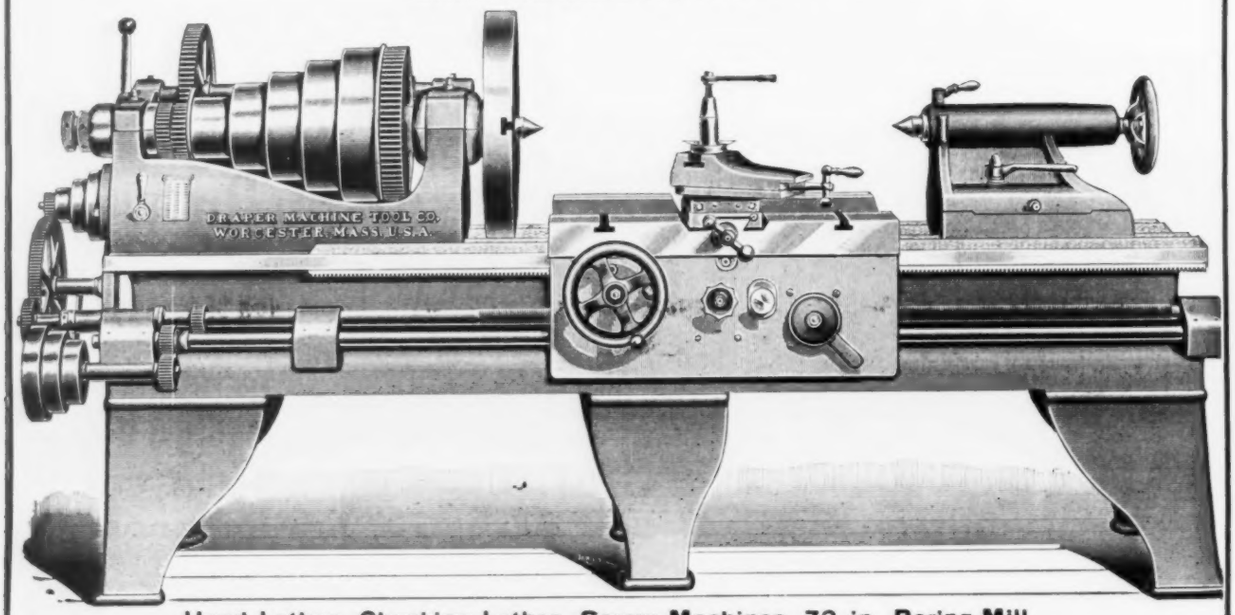
SHIPPING WEIGHT, 4170 Lbs



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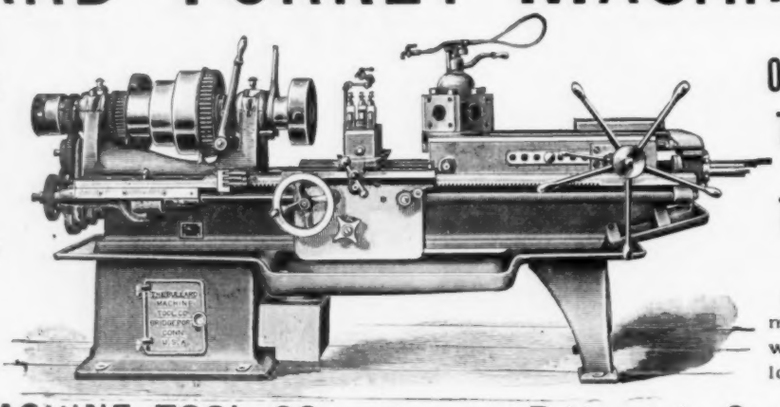

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such as we make, is as essential in every Machine Tool Shop as is power, and an indispensable factor in the operation of your tools. Something very interesting is to be read in our book which we send free. Want one?

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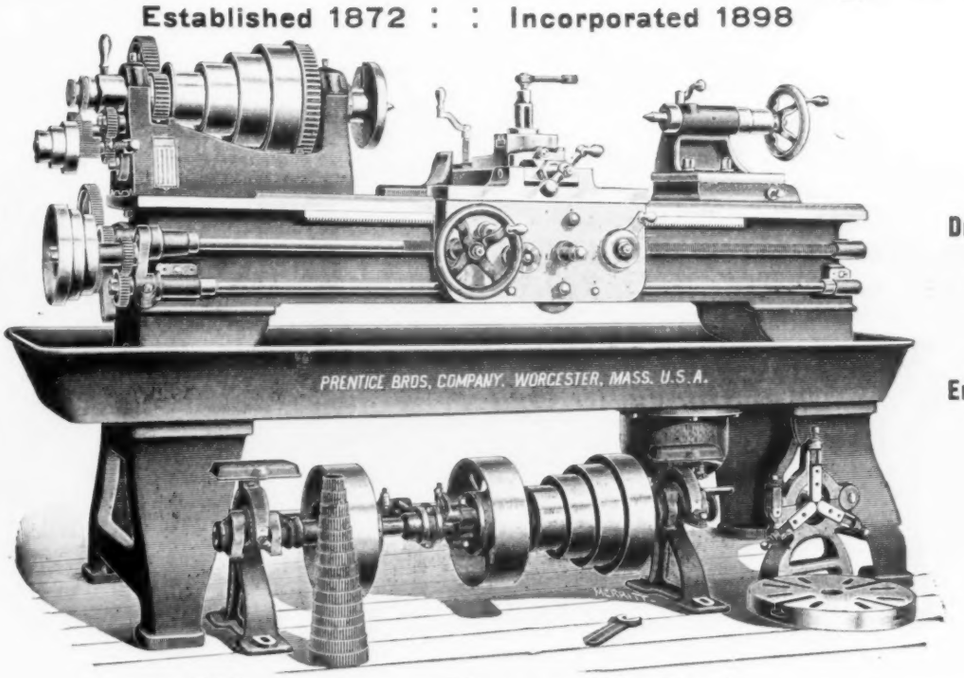

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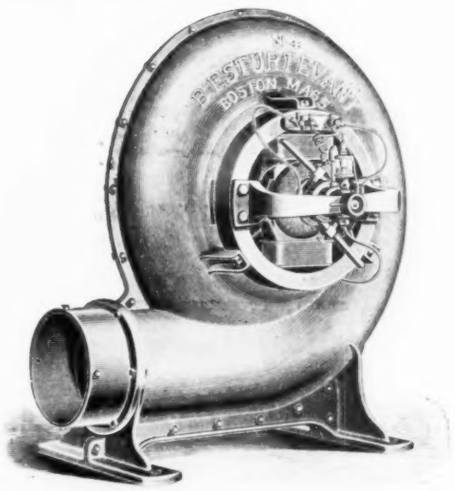

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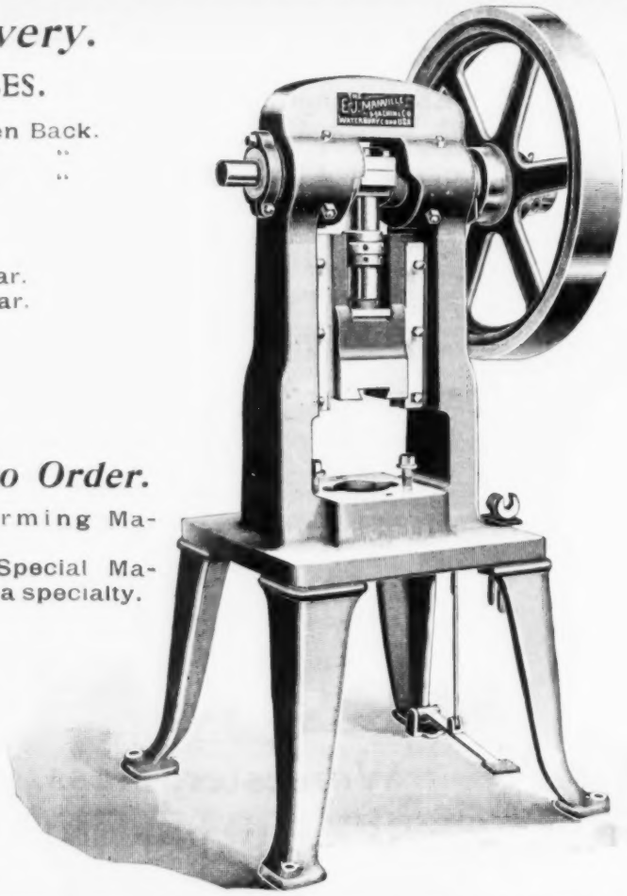

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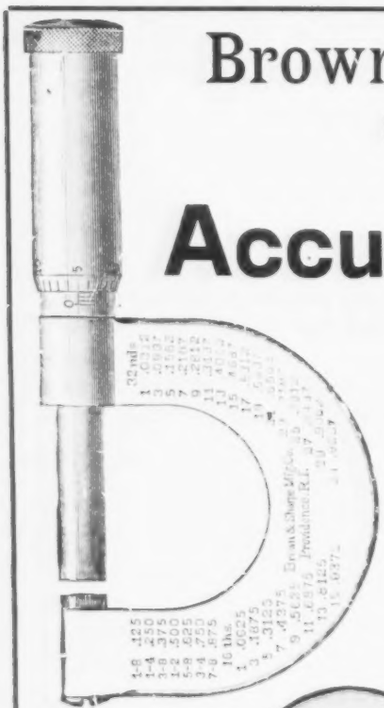

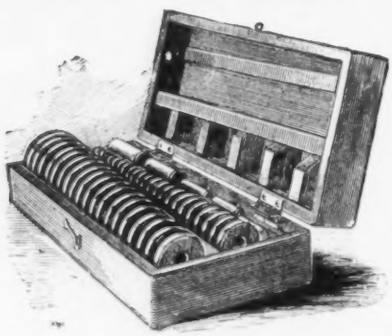

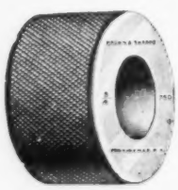

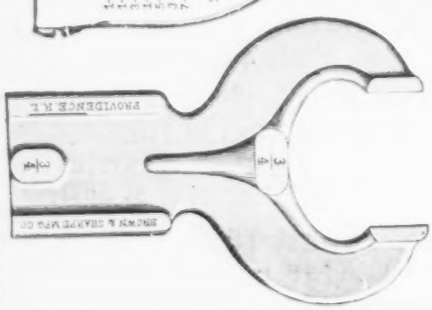

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52 in. x 22 ft. Gleason, heavy pattern, triple geared, screw and friction feed, cpd. rest, cross feed, &c. Spindle 9 in. diam.
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32 in. x 18 ft. Waterman, heavy pattern, cpd. rest and cross feed, complete, practically new.
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18 in. x 8 ft. Flather, do. do.
16 in. x 6 ft. Reed, Prentice, Blaisdell, Ames.
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13 in. x 6 ft. Ames, "Special Reverse Feature."
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50 in. x 6 ft. Gray Co.'s, spiral geared.

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9 in. stroke, Hewes & Phillips, crank motion.
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12 in. stroke, Prentiss, do.
20 in. stroke, Improved, do.

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7 ft. arm, complete universal with swivel head and arm, heavy pattern, back gears and auto. feed.
5 ft. arm, Box Co.'s semi-universal, swivel arm, back gears and auto. feed.

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4 ft. arm, improved style with all attachments, including tapping arrangement.
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3-Spindle gang drills, Slate Mch. Co.'s.
20 in. swing, Prentice, auto. feed.
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Pratt & Whitney No. 2, wire feed capacity ⅝ in.
Bardons & Oliver No. 2, wire feed capacity 29-32 in.
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Bardons & Oliver No. 4, wire feed capacity 1 9-16 in., friction head, pump and collets.
Garvin No. 3, wire feed capacity 1 15-16 in., friction head, turret feed, pump, &c.
Davis & Egan, wire feed capacity, 2 in. friction head, turret feed, pump, &c.
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Garvin No. 12, auto. feed, arm, vise, &c.
Garvin No. 1, Lincoln with dbl. sprocket centers.
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Brown & Sharpe No. 1 universal with atts.

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Bending Rolls, 14 ft., "Bement style," swing housing, friction pulleys, all improvements, entirely new.
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Slates Mch. Co.'s Cutter and Reamer Grinder.

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One 16 in. x 32 in. "Fishkill" Horizontal Corliss Engine, practically new.
One 200 lb. "Bradley" Helve Hammer.
One 60 in. x 60 in. x 12 ft Planer.
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The above are second-hand but in first class condition.

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Second-hand Machinery,

IN FINE CONDITION.

60 in. New Haven Pulley Lathe.
21 x 24 Perkins, plain rest and chuck.
20 x 8 Putnam, compound rest, chuck fitted.
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40 in. New Haven Drill, back geared, power feed.
34 in. Barnes ditto.
26 in. Newton Gear Cutter.
No. 1 Garvin Universal Miller.
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Punch and Shear, capacity ⅞ hole in ½ in. plate.
No. 2 Punch Press, weight 230 lb.
Large stock of New Machinery always on hand.

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Second-Hand Railroad Tools

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400 lb. Pratt & Whitney Drop Hammer.
2500 lb. Double Acting Steam Hammer.
6 ton Single Acting Steam Hammer.
4000 lb. Double Acting Helve Hammer.
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15 ton Morgan Electric Crane.
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6-inch Double Cutting-off Machine, Niles pattern.

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16 in. to 32 in. stroke.

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Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

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- 16 in. x 7 ft. Harrington.
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FOR

General Machine Shop Use.

20 in. x 8 ft. F. E. Reed Engine Lathe.
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84 in. x 18 ft. Engine Lathe.
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⅝ in. Cleveland Automatic Screw Machine.
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18 in. Brainard Hand Gear Cutter.
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36 in. x 36 in. x 9 ft. New Haven Planer.
2-Spindle Profiling Machine.
Radial Drill made by Dietz, Gang & Co., drills to centre of 80 inches.

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1 Planer 72 in. x 36 in. x 9 ft., two heads.
1 Planer 60 in. x 60 in. x 14 ft., Screw feed, cheap.
1 Iron Planer, 36 in. x 36 in. x 14 ft.
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1 Engine Lathe, 22 in. x 14 ft., with chuck.
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1 400 lb. Morgan Steam Hammer.
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1 250 lb., 1 200 lb. Farrell Drop.
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Machinery appraised any part of country.

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Brown & Sharpe Screw Machine.

With Automatic wire feed, automatic chuck and power feed to turret. Hole through spindle 1 1-16 in., through wire feed 11-16 in. Weight about 1580 lbs. Fine condition.

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- 1 16 x 6 Fifield.
- 1 16 x 6 Star.
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- 1 18 x 8 Lodge & Davis.
- 1 18 x 7 Pond.
- 1 18 x 8 Putnam.
- 1 18 x 8 Lodge & Barker.
- 1 18 x 10 Steptoe-McFarlan.
- 1 20 x 8 Pond.
- 1 25 x 18 Leonard.
- 1 24 x 16 Sellers.
- 1 26 x 20 Pond.

PLANERS.
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DRILLS.
- 1 26 in. Barnes Drill.
- 1 28 in. National Drill.
- 1 5 ft. Niles Half Universal Radial Drill.
- 1 Wall Radial Drill.

SHAPERS.
- 1 15 in. Betts Traveling Head.

SCREW MACHS.
- 1 ⅞ Screw Machine.
- 1 No. 3 Pratt & Whitney, Friction Head.
- 1 No. 3 Pratt & Whitney, Plain Head.
- 1 Davis & Egan Hub Machine.

MISCEL.
- 1 Garvin Hand Milling Machine.
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- 1 5 in. Cutting-off Machine.
- 1 15 x 5 Lodge & Davis Hand Lathe.
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Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ¾, 1¼, 1⅝ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in. Hand Lathes.
1⅛ in. and 2 in. Automatic Bolt Cutters.

The American Tool Works Co.,

Successors to THE DAVIS & EGAN M. T. CO.,

CINCINNATI, OHIO, U. S. A.

FOR SALE.

15 Automatic Screw Machines, 35 Pratt & Whitney Screw and Chucking Machines and over 200 other tools.
Catalogue now ready.

A. B. PITKIN MACHINERY CO.,
PROVIDENCE, R. I.

FOR SALE.
Second-hand Machinery.

ENGINE LATHES.
- 1 84 in. x 18 ft. Wheel Lathe.
- 1 54 in. x 22 ft. Pond Lathe, Triple B. G.
- 1 26 in. x 14 ft. Fitchburg C. R.
- 1 26 in. x 40 in. x 10 ft. Gap Turning Lathe.
- 4 20 in. 8 to 10 ft. Engine Lathes.
- 15 18 in. x 6 to 10 ft. Engine Lathes.
- 38 14 in., 15 in. and 16 in. Lathes, various makes.

PLANERS.
- 1 40 in. x 36 in. x 8 ft. Old Style.
- 1 36 in. x 36 in. x 9 ft. New Haven.
- 1 30 x 30 x 10 Putnam.
- 1 24 x 24 x 6 Whitcomb.
- 1 24 x 24 x 5 Pond.
- 1 16 x 16 x 4 Hendey.

SHAPERS.
- 1 36 in. Hendey.
- 1 15 in. "
- 1 12 in. "
- 1 20 in. G. & E.
- 1 14 in. Putnam Traveling Head.

MILLING MACHS.
- 1 No. 4 Cincinnati Univ.
- 1 No. 2 " Plain.
- 1 No. 2 Garvin Plain.
- 1 No. 13 B. & S. Plain.
- 2 No. 12 B. & S. Plain.
- 2 Ames Lincoln.
- 1 No. 3 P. & W. Lincoln.

DRILLS.
- 1 40 in. Bickford.
- 1 28 in. Barnes.
- 1 26 in. Kirkhoff.
- 1 25 in. Barnes.

MISCELLANEOUS.
- 1 54 in. Bement Boring and Turning Mill.
- 1 12 in. Bement Slotter.
- 1 25 lb. Bradley Helve Hammer.
- 1 80 lb. Bradley Helve Hammer.
- 1 50 lb. Bradley Upright Cushioned Hammer.
- 1 No. 2 Williams & White Bulldozer.
- 1 Davis & Egan Hub Machine.
- 1 Davis & Egan Screw Machine, 2⅝ in. wire feed.
- 1 44 in. Wheel Borer.

Also complete line of improved new machine tools. Write us for anything you want.

McDOWELL, STOCKER & CO.,
59-61 S. Canal St., Chicago, Ill.

Iron Workers!

I want to sell quickly

Two Heavy Bolt Headers with dies.
One 1½ in. Gould Bolt Cutter.
One Double Punch, ⅜ in. x ¼ in.
One Single Punch, ½ in. x ⅜ in.
One 13 in. Alligator Shear.
One 8 in. Alligator Shear.
One Angle and Plate Slitting Shear
One 100 in. Guillotine Morgan Plate Shear.

THOMAS P. CONARD,
119 So. 4th St., Philadelphia.

FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 38 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
24 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " " " "
10 Friable Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 3 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
12- 8½ x 10¾ x 10 Compound Worthington Pump.
10-16 x 10¼ x 10 " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
12 B'way, N. Y. City.

Second-hand Machinery.

1 Bement-Miles Hydraulic Riveter.
8 ft. gap, with pump, accumulator, punches, dies, etc., complete.
1 Set Power Bending Rolls. 9 ft.
1 Multiple Punch. Long & Allstatter.
43 in. between housings, spacing table.
2 Punches. 22 in. throat.
1 Shear. 33 in. throat.
1 Punch. 25 in. throat.
1 No. 4 Root's Positive Blast Blower.
1 Complete tin can factory equipment, with 60 machines.

READE & BOWLER,
216-217 American Trust Building,
CLEVELAND, O.

Machine Shop
FOR SALE.

Tools used in Piano Factory and will be sold in lots to suit; all in first-class shape and condition and comprising principally the following:

2 Brainard Small Hand Milling Machines.
1 Brainard No. 5 Standard Milling Machine, with Vise and Index Centres.
3 No. 5 Jones & Lamson Screw Machines, wire feed, capacity to ½ inch.
1 No. 5 Horton Toggle Single Action Press, 6000 lbs
1 Each No. 0, 1, 2, Howard Single Action Press.
1 Perkins Rack Cutting Machine, 30 in. feed; small single and double spindle Threading and Tapping Machines to 5-16 in.; Emery Grinders; 10 in. to 16 in. Special Lathes and 13 in. x 5 ft. Blaisdell Engine Lathes.

Correspondence solicited. Address for particulars,
S. T. LUND, 54 Oliver St., Boston, Mass.

CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 ft. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

BOILERS.

3 125 H. P. Loco. Style, 100 lbs. steam pressure.
2 100 H. P. Loco. Style (Wooten fire boxes).
7 80 to 100 H. P. Loco. style, 100 lbs. steam.
1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished.

POULTERER & CO.,
410 Bullitt Bldg., Phila., Pa.

FOR SALE.

26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in., built by C. H. Brown & Co., Fitchburg, Mass.

FRANK McSWEGAN & SONS,
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Second-Hand Machinery.

Engine Lathes.
- 13 in. x 6 ft. Ames.
- 14 in. x 6 ft. Prentice.
- 16 in. x 6 ft. Ames.
- 18 in. x 12 ft. Bogart.
- 27 in. x 12 ft. W. & L.
- 16 in. x 8 ft. Pattern Makers.

Screw Machines
- No. 2 Wire Feed.
- No. 2 P. & W., plain.
- No. 2½ P. & W., W. F.
- No. 4 Windsor, plain.
- No. 4 Windsor, W. F., auto.
- No. 2 Niles, heavy.

Planers.
- 16 in. x 16 in. x 4 ft.
- 20 in. x 20 in. x 5 ft.
- 24 in. x 24 in. x 4 ft.
- 25 in. x 25 in. x 10 ft.
- 28 in. x 28 in. x 8 ft.
- 36 in. x 36 in. x 12 ft.
- 48 in. x 48 in. x 15 ft.
- 60 in. x 60 in. x 22 ft.
- 72 in. x 72 in. x 40 ft., 3 heads.

Shapers.
- 9 in. T. H., Sellers.
- 13 in. T. H., Bement.
- 20 in. G. & E.

Drills.
- 6 Spindle, Quint.
- Pond Suspension.
- 22 in. G. & E., geared.
- 24 in. Ames, geared.
- 32 in. G. & E., geared.
- 32 in. Harris, geared.
- Combined Drill and Slotter.
- 4 spindle Ames.
- Bicycle Frame Drill.

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- Lincoln Type, P. & W.
- Hand Miller, Ames.
- Special Cam Miller.
- Double Head Cam Miller, P. & W.

Miscellaneous.
- 24 in. Lead Lap. Mch.
- No. 2 W. T. Grinder.
- Centering Machine.
- 24 in. Gear Cutter.
- 36 in. H'd Gear Cutter.
- 48 in. x 12 ft. Hor. Boring and Drill. Machine.
- 12 in. Splitting Shear.
- Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.,

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Screw Machines.

No. 3 Cleveland Automatic, plain, wire feed.
2 No. 1 Pratt & Whitney.
No. 3 Windsor, wire feed, new.
No. 4 Windsor, back gears, wire feed, new.
No. 3 Pratt & Whitney, wire feed.
No. 2½ Garvin, friction back gears, spring chuck.
No. 3 Garvin, friction back gears, spring chuck.
No. 3 Warner & Swasey, friction back gears, wire feed.
No. 4 Bardons & Oliver, friction back gears, wire feed.
No. 6 Warner & Swasey, friction back gears, wire feed.
Davis & Egan Hub Machine, complete.

Marshall & Huschart Machinery Co.,

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PLATE MILL.

Magnificent 22-inch, two-high plate train of rolls, all complete ready to run on nail plate, skelp, or sheets Weight, 100 tons. Price 1c. per pound.

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Rothschild Bldg., Phila., Pa.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
- 36 in. x 18 ft. Fifield.
- 25 in. x 12 ft. S. C. Forsaith.
- 21 in. x 16 ft. S. C. Forsaith.
- 18 in. x 8 ft. Blaisdell.
- 16 in. x 6 ft. Reed.
- 16 in. x 6 ft. Porter.
- 15 in. x 6 ft. Porter.
- 12 in. x 5 ft. Silk.
- 10 in. x 4 ft. Frasse.
- 1 15 x 5 Speed Lathe.
- 1 16 in. x 5 ft. Friction head, Warner & Swasey monitor.
- 1 36 in. Putnam Pulley Lathe.
- 17 in. x 17 in. x 4 ft. Putnam Planer.

Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
12 in. x 5 ft. Turret Lathe
No. 3 Power Press, R. & K.
No. 4½ B. G. Garvin Miller.
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
1 1 in. Double head Acme Bolt Cutter.
1 ⅜ in. 4-spindle Acme Nut Tapper.
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
1 250 Light Dynamo.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago.

FOR IMMEDIATE DELIVERY.

72 in. Vertical and boring machines, new, made by H Bickford.
50 in. Bickford vertical boring and turning mill, one head, fine condition.
4 in. bar, 7 ft. table Betts Machine Co., horizontal boring machine, all complete, fine order.
4 in. bar, 7 ft. table, Newark Machine Tool Co., ditto, good as new.
60 x 60 x 11 ft. Bement planer, one head on cross rail, one side head.
74 x 51 x 24 Betts Machine Co., planer.
2 44 x 42 x 15 ft. ditto, good working order.
No. 3 Bickford radial drilling machine, new.
2 No. 2 Bickford radial drilling machines, with tapping attach. new
2 No. 1 Bickford radial drilling machines, new
36 x 18 Putnam standard, latest pattern engine lathe, triple g'd head stock, new.
50-60 x 18 Fifield Tool Co., triple geared, latest pattern, new.
Also a full line of Lodge & Shipley and Putnam Engine lathes in stock
Send for complete lists of new and second-hand tools.

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ROLLING MILL MACHINERY FOR SALE.

1 3-high Plate Mill with extra rolls.
1 21-in. Puddle Mill with extra rolls.
9 Double Puddle Furnaces.
1 Guillotine Shear, 87 in. knives.
1 Alligator Shear, 27 in. jaw, will cut 2 in. by 12 in. steel slabs, or 5 in. axles.
1 Rotary Shear; will shear ⅝ in. plates.
4 Muck Bar and Bar Iron Shears.
1 Large Steam Hammer.
2 Steam Jib Cranes.
1 Rotary Squeezer with engine, 48 in. drum.

All the above machinery is in good condition and will be sold separately. Address

JOS. H. McCLURE & SON
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I buy Iron and Metal Scrap and wish to hear from anybody having cotton ties, pipe, hoops, cast borings, wrought and steel turnings, boilers, cast scrap, etc. Also wrecks from fire, etc.

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FOR SALE!!
PATTERNS OF BOILER TOOLS,

Including Patents, Drawings and Business of two improved Tools now in use in the Largest Boiler Shops in the country. Home and Foreign Trade established Other business demands attention.

Address Lock Drawer No. 19,
LIBERTY, IND.

ROLLING MILL
For Sale or Lease.

The property known as the Seyfert Rolling Mills is offered for sale or lease.

This Mill is located on the Wilmington & Northern R. R., five miles from Reading, Pa., and is equipped for making Sheared Pipe Skelp, Sheet Iron, Plate Iron and Puddled Bars.

The property is in perfect condition and can be started up in 24 hours time. Is, without doubt, one of the best mills in the state; has always been a money-maker and should prove a very desirable and profitable investment to anyone desiring to go into the iron business.

This Mill would be indispensable to the Wrought Iron Pipe Trust now forming.

For terms or particulars, apply or address

SAM'L R. SEYFERT & BRO.,
Reading, Pa.

SECOND-HAND

Metal-Working Machinery

At Bargain Prices.

Lathes.

One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain rest and special feature.
One 90 x 26 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24 in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Pement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N. Y. City.
Branches at Chicago and Pittsburg.

ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 30 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

For Immediate Delivery.

Twelve 10 in. Foot Power Engine Lathes.
Twelve 10 in. Power Engine Lathes
Twelve 12 in. x 5 ft. Engine Lathes.
Twelve 14 in. x 6 ft. Engine Lathes.
Six 17 in. x 6 ft. Engine Lathes.
Six 17 in. x 8 ft. Engine Lathes.

These Lathes are our own make and guaranteed first-class in every particular. Price low and can ship on receipt of order. We also build 3 in. and 4½ in. Cutting off Machines, Keyseaters and Upright Drills. Send for photographs and catalogue.

The W. P. Davis Mch. Co.,
ROCHESTER, N. Y.

FOR SALE.

1 32 in. x 108 in. Plate Mill, Roughing Rolls 2 in. x 84 in.; live tables and Vertical Table Engines.
1 Pair 36 in. x 40 in. Horizontal Reversing Engines.
1 110 in. Guillotine Plate Shear.
1 24 in. x 70 in. Blooming Mill, with 28 in. x 42 in. Reversing Engines, with gearing, tables and table engines.
1 18 in. 3-high Bar Mill.
1 20 in. 3-high Sheet Mill.
2 10 in. 3-high Guide Mills.
Engines, Shears, Punches and Cosgrove Straightener.
2 Hoisting Engines.
7 Boilers.
Engine Lathe, Roll Lathe, Planer Drill Press and Blowers.
1 10 ton Standard Gauge Locomotive Crane.
Supply and Hydraulic Pumps and Cranes.
A Large lot of other machinery such as used in large steel works.

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh, Pa.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. A1 order.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

17 pairs Alligator and Rotary Shears cutting from one inch to six inch cold Steel Axles. Can be seen at Catasauqua, Pa.

Apply

WM. ECKBOLDS' SONS,
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For Quick Delivery.

1 Shear with Engine 126 inch, used.
1 Roll for straightening light plates, used.
1 Roll 40 inch for sheets, new.
2 Hackney Hammers.

WAIS & ROOS P., S. & ROLL CO.,
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SPECIAL BARGAINS.

One No. 8 Root Blower Nearly New.
Baker Blowers, Nos. ½, 3, 4, 5 and 7.
Root Blowers, Nos. 2, 3, 4 and 6.
One Fisbe Lucop Mill.
Vertical Engines, 6¼ in. x 7 in., 12 in. x 12 in., 16 in. x 16 in.
Horizontal Engines, 6 in. x 6 in., 7 in. x 10 in., 8 in. x 15 in., 10 in. x 12 in., 12 in. x 24 in., which is a cut off. Other sizes up to 500 Horse. Seven 100-Horse Boilers good for 90 lbs., $250 each. Numerous machines not mentioned for want of space.

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Steam Power Hammers
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Power Presses
FOR SALE.
BEAUDRY & CO.,
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Second-hand Tools.

U. Baird Machinery Co.

323-325 Water St., 392-394 First Ave.,

PITTSBURGH, PA., U. S. A.

3 in. x 48 in. Hand Bending Rolls.
No. 0 Stiles & Parker Fowler Press.
No. 1 " " " "
36 in. Gould & Eberhardt Spur Gear Cutter.
No. 1 Newton Plain Milling Machine.
No. 11 Brown & Sharpe Milling Machine.
48 in. Pulley Borer.
19 in. Putnam Slotter.
100 lb. Merrill Bros. Air Cushioned Hammer.
80 lb. " " " " "
24 in. Hendey Shaper.
No. 10 Sturtevant Pressure Blower.
No. 8 " Monogram Blower.
48 in. Box Radial Drill.
24 x 24 x 5 ft. Planer.
2 in. Acme Bolt Cutter.
18 in. Blaisdell Drill Press.
400 lb. Steam Hammer.
9 in. Star Foot Lathe.
Engine and Turret Lathes.

SECOND-HAND MACHINERY.

For Sale Low.

Engine Lathes.

20 in x 6 ft. Ames compound rest.
20 in. x 7 ft. Ames plain rest.
20 in. x 12 ft. Pond plain rest, compound rest and grinding attachment.
23 in. x 8½ ft. Pond plain rest, compound rest and 22 in. chuck.
23 in. x 8½ ft. Pond plain and compound rests.
24 in. x 10 ft. Fitchburg.
28 in. x 12 ft. Wood & Light compound rest.
28 in. x 12 ft. Fay and Scott compound rest, new.

Punch Presses.

No. 2 Stiles.
No. 2 Viellard & Osswald.
No. 4 Stiles.
No. 45 Jones.
No. 52 Ferracute.

New and Second-hand Machinery of Every Description.

Write us your wants.

The Garvin Machine Co.,

Spring and Varick Sts., N. Y.

Phila. Store, The Garvin Machine Co., 51 No. 7th St., Philadelphia, Pa.

WANTED

Six spindle Turret Lathe about 18 in. by 6 ft., also No. 5 Geared Power Press. State condition and price.

PULLMAN SASH BALANCE CO.,
Rochester, N. Y.

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"
Care *The Iron Age*, 805 Fisher Bldg., Chicago.

NAIL MACHINES

For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery.

FOR SALE.

Two Blast Furnace Blowing Engines.

MODERN DESIGN,
GOOD MAKE,
BUT LITTLE USED,
IN GOOD CONDITION.

84 in. Blast Cylinders, 4 ft. Stroke.

40 in. Steam Cylinders.

PRICES VERY ATTRACTIVE.

Inquire of

H. W. ALLISON, Treas.,
Allentown, Pa.

FOR SALE.

1 200 H. P. Wheelock Engine.
1 60 H. P. Armington & Simms Engine.

A large lot of new and second-hand Iron and Wood Working Machinery on hand. Do not fail to write us if you want to buy or sell.

THE THOMAS & LOWE MACHINERY CO.,
51 Washington St., Providence, R. I.

FOR SALE.

Four fly wheels, each 25 feet in diameter, weighing 42 tons each, built in 12 segments and two centers, with rims turned and faced. We built these wheels for our own tin mills, and after a few months' use of them replaced them with heavier wheels. Will be sold low.

MACKINTOSH, HEMPHILL & CO.,
Pittsburgh, Pa.

Second-Hand Equipment

FOR SALE.

2 12 in. Condensers, made by L. Schutte & Co.
2 12 in. Injectors, Korting's patent, made by L. Schutte & Co.
1 No. 2 Portable Drill, made by Thorne & De Haven.
1 No. 4 Steam Rock Drill, made by Vulcan Iron Works.
6 Planer or Shaper Chucks or Vises.
1 Cylinder Boring Machine.
2 Twin Horizontal Steam Pumps, 6 in. suction, 10 in. discharge.
1 Riehle Bros. Railroad Track Scale.
25 Pair of Portable and Wagon Scales, 600 to 20,000 lbs. capacity.
30 Pair 30 in. Gauge Wheels and Axles.
10 Two Wheel Furnace Charging Buggies, new.
1 Lot of Standard Taps, Reamers and Twist Drills.
1 Testing Machine, made by Tinius Olsen & Co., 200,000 lbs. capacity.
2 10 in. 3 High Bar Mills with 312 extra rolls.
1 22 in. x 60 in. 2 and 3 High Plate Mill.
1 18 in. 2 High Bar Mill with 101 extra rolls.
1 21 in. 3 High Bar Mill, 75 extra rolls.
1 15 in. 3 High Bar Mill with 64 extra rolls.
1 18 in. 2 High Muck Mill, 13 extra rolls.
30 Single and Double Heating Puddle Furnaces, complete with all plates, boilers, stacks and all necessary fixtures.
100 Tons of Puddling and Heating Furnace Tongs and Tools.
Large quantity of Cinder Buggies and Carriages used around furnaces and roll trains.
500 Tons of Floor Plates, principally 2 x 4 x ¾ in.
6 Straightening Beds.
8 Roll Turning Lathes.
3 Squeezers.
1 Chaser Mill.
50 Machinist and Blacksmith Leg and Bench Vises.
35 Vertical and Horizontal Engines from 4 to 500 H. P.
8 Sturtevant Fans or Blowers from 5 in. to 30 in. blast opening.
1 Large Steam Vertical Straightening Machine.
3 Angle or Bar Straightening Machines.
12 Hand or Power Driven Radial Cranes from 2 to 10 tons capacity.
2 Power Driven Overhead Traveling Cranes made by Yale & Towne.
Large quantity Shafting, Pulleys, Hangers and Steam Pipe.
100 Wrought Iron Plates, 11 ft. 3 in. x 39 in. x ¼ in.
100 " " " 11 ft. 3 in. x 39 in. x ⅜ in.
24 " " " 10 ft. x 54 in. x ½ in.
33 lengths 10 in. Cast Iron Water Pipe, good as new.

We can make immediate shipment of all kinds of machinery or equipment for rolling mills or blast furnaces.

C. R. Baird & Co.,

PIG IRON,

PHILADELPHIA.

Providence Steam Engine Company,

PROVIDENCE, R. I.

SECOND-HAND ENGINES FOR SALE.

One 12 x 36 Wheelock Engine, right hand, wheel 9 ft. diameter, 17 in. face, solid, 44 horse power.

One 23 x 60 George H. Corliss Engine, right hand, wheel 20 ft. diameter, 38 in. face, 272 horse power, 60 revolutions, $1100.

One pair 30 x 60 George H. Corliss Engines, wheel 28 ft. diameter, 90¾ in. face, 463 horse power, (per engine) $3850.

One 9 x 18 Exeter Engine, right hand, wheel 7 ft. diameter, 12 in. face, 35 horse power, 100 revolutions, $350.

One 18 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 25 in. face, 175 horse power, 80 revolutions, $770.

One 20 x 48 Greene Engine, right hand, wheel 16 ft. diameter, 26 in. face, 219 horse power, 80 revolutions, $1650.

One 12 x 36 Babcock & Wilcox Engine, left hand, wheel 20 ft. diameter, 24 in. face, 52 horse power, 70 revolutions, $330.

One 10 x 24 Rider Engine, right hand, wheel 7 ft. diameter, 14 in. face, 31 horse power, 92 revolutions, $110.

One 14 x 48 George H. Corliss Engine, right hand, 16 ft. wheel, 20 in. face, 100 horse power, 75 revolutions, $275.

The horse powers are all figured on 80 lbs. steam, ¼ cut-off. Deliveries are f.o.b. Providence.

HEAVY TOOLS.
For Quick Delivery—Good as New.
Column Lathe, 54 in. x 30 ft., Solid Cast Base, 2 Heads. Splendid Tool.
4-Spindle Drill Press, Movable Spindles and Table. Quick and Accurate. Heavy Tool. Finest Condition. H. E. PERRY, 3923 Union Av., Chicago

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for *immediate operation,* consisting of *complete Skelp Mill,*

6 Double puddling furnaces,
3 Heating furnaces,
3 Trains of rolls; also
2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

The Blast Furnace with this property will be dismantled. The Blowing Engines, Pumps, Dynamo, etc., are for sale.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

For particulars address the Secretary of The Board of Trade, Worcester, Mass.

INVESTIGATE.

Drop Presses.

One E. W. Bliss 800 lb. Automatic Board Drop, fitted with hand and foot treadle, no poppets, hammer and anvil dovetailed to hold dies, construction similar to Bliss Drop shown on page 242 of their new catalogue, in good order.

One E. W. Bliss 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, hammer and anvil dovetailed to take dies, similar to above description, in good order.

One Morrill Brothers 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, also steel uprights, has 6 ft. drop, with one extra hammer weighing 1,700 lbs., hammer and anvil fitted with dovetail to take dies, in good order.

Ready for Delivery May 1st, 1899.

One Arch Power Press with Dial Feed. Good Order.

One three spindle Lathe, 12 in. x 6 in. swing, 8 ft. bed, no countershaft. Good Order.

One Quint Drill, Turret Head. In A1 Order.

One Tapping Machine. In A1 Order.

One Automatic Milling, Drilling and Tapping Machine for finishing battery zincs. Can be adapted for other work of a similar character. In A1 Order.

One Semi-Universal Milling Machine, Mossberg Make. In A1 Order.

MOSSBERG & GRANVILLE MFG. CO.,
PROVIDENCE, R. I.

FOR SALE.

Rolling Mill at Bristol, Pa., well equipped for making Bars, Band and Hoop Iron.

RODMAN WISTER,
Trustee,
672 Bullitt Bldg., Philadelphia, Pa.

CHEAP.

Cameron Pumps.
Centrifugal Pumps
Root Blower No. 2.
Large Sturtevant Blast Wheels.
Exhaust Fan, Ventilating Fans.
Guild & Garrison Double Vacuum Pump.

Above all in **perfect condition,** used only **two weeks** and will be sold **very low.**

VARIETY MACHINE CO.,
Warsaw, N. Y.

FOR SALE.

One 22 x 42 Wright Corliss Engine in very good condition.

CRANE CO.,
10 N. Jefferson St., Chicago, Ill.

FOR IMMEDIATE SHIPMENT.

Rolling Mill and Steel Works Machinery as Follows:

Bessemer Converter with bottoms, ladles and Morgan Hydraulic Lable Crane.
35-in., 3 high Mackintosh-Hemphill Blooming Mill, with 30 x 36 inch Vertical Corliss Engine for driving same.
24-in., 3 high Mackintosh-Hemphill Billet Mill, both with Hydraulic Raising Tables and Manipulators.
Horizontal Billet Shear (Mackintosh-Hemphill make) with 14 x 18-in. Engine attached.
Several Hydraulic Cranes of various sizes.
One 10-ton Hand Crane.
Two 2-ton Hand Cranes.
Three Roll Lathes.
One Bar or Scrap Shear, with engine attached.
One 80 H. P. Locomotive Fire Box Boiler.
One 60-in. by 16 ft. Horizontal Tubular Boiler.

MACHINE TOOLS.

One Engine Lathe, swings 60 in. by 18 ft. between centers, with extra live head for pit work.
One 24-in. Drill Press.
Double Emery Wheel Stand.
One 6-in. Gould Shaper.
One 18-in. by 6 ft. Lathe.
One No. 1½ Garvin Hand Milling Machine.
Jig Saw, Shaper, or Edge Freezing Machine, Combination Saw, Boring Machines, Wood Turning Lathe, etc.
One 16-in. by 24 in. Standard Gauge Locomotive.
Five 3-foot gauge Locomotives.
One Steam Shovel.
A large stock of new and second-hand hoisting engines.
We manufacture grinding pans, shears, hoisting engines, boilers and sheet iron work.

THOMAS CARLIN'S SONS
ALLEGHENY, PA.

FOR SALE.

A miscellaneous lot of iron buildings, not including sides or roof covering, as follows:

One building, 80 ft. span, 242 ft. long, 16 ft. high to under chord of truss; shed addition 20 ft wide.

One building 80 ft. wide (in two spans), 114 ft. long, 16 ft. high to bottom chord ventilators.

One building 120 ft. wide, 372 ft. long, with center posts. Ventilator 16 ft. to bottom chord.

One building 120 ft. wide, 124 ft. long, 20 ft. to bottom chord center posts.

One building 65 ft wide, 176 ft long, 37 ft. high to bottom chord.

One building 65 ft. wide, 106 feet long, 37 ft. to bottom chord.

One building 36 ft. wide, center span, 27 ft. high to bottom chord, with a 70 ft. lean-to on each side; total width of building 176 ft.; height of lean-to 12 ft. under chord; length of this building 198 ft.

One building like above, 260 ft. long.

Also 20 tubular 60 in. diameter 16 ft. long boilers with independent stack to each, set in two batteries, with feed pumps, heaters, stokers, connections, etc.

Eight Galway boilers 84 in. diameter, 28 ft. long.

A miscellaneous lot of upright engines, both double and single cylinders, from 10 to 100 horse power.

Twelve Smythe producers with valves, cooling tubes, etc.

For further information address

WM. D. HARTUPEE, Chief Engineer,
Pittsburgh Plate Glass Co.,
Carnegie Bldg., Pittsburgh, Pa.

For Sale.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & Bodley Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 12 x 34 Brown Automatic Engine.
1 30 x 30 x 8 Whitcomb Planer.
1 50 in. Stevens Pulley Lathe.

WICKES BROS., Saginaw, Mich.

PITTSBURGH

SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.

No. 8 Wood St.,

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We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

For Sale in Cleveland, Ohio.

AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

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Locations for Industries.

The Chicago Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
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FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

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FOR SALE.

One Stiles & Parker Press, No. 3 and No. 4. One Sturtevant Blower and Countershaft, No. 0. All in good order.

The THOMAS LAUGHLIN COMPANY
Portland, Maine.

TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address

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Manufacturers

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OF

Valuable Coal, Timber & Farming Lands

In Somerset County, Pa.

6,000 ACRES MORE OR LESS.

ADRIAN H. MULLER & SON

will sell at auction on

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At 12 o'clock noon, at the N. Y. Real-Estate Salesroom, No. 111 Broadway, New York City.

This property is about 2¼ miles west of WEST SALISBURY STATION on the SALISBURY BRANCH, BALTIMORE AND OHIO R. R., which is a good shipping point; the Railroad having surveyed for an extension of their road to within ½ mile of these lands, makes it easy of access. The Mutual Telegraph Co. run over the lands around the public roads.

THESE LANDS are underlaid with BITUMINOUS COAL, FIRECLAY, IRON ORE and LIMESTONE, and have a fair average of the several kinds of Timber grown in this section, viz.: WHITE OAK, RED OAK, HEMLOCK, ROCK OAK, ASH, POPLAR, CHERRY, BLACK BIRCH, CHESTNUT, etc.

After the timber is cleared off, will make good farming and grazing lands, being well supplied with running streams.

THE ATTENTION OF COAL COS., IRON AND COAL MINERS, AND RAILROAD COS., ALSO CAPITALISTS, IS CALLED TO THE SALE OF THIS PROPERTY.

50 PER CENT. may remain on **BOND AND MORTGAGE** at 5 per cent. interest for One Year or all cash if desired. **Reports of E. V. D'Anvilliers, Geologist and Mining Engineer,** of **Philadelphia,** and other particulars can be had at the **Auctioneers'** office, **24 Pine Street, N. Y. City.**

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Second-hand Open Side Extension Planer.

Intending to put a large planer in its place, we will sell our 48 in. high x 20 ft. long Open Side Extension Planer now running in works for $2500 f.o.b. Baltimore. It has four heads, two on the cross rail and one on each post. In good order; can be seen any day at our works.

The DETRICK & HARVEY MACHINE CO.,
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Jobs and Specials for SPOT. Send particulars.

BROWNE & MANSFIELD,
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SALESMEN WANTED

in every State in the Union who visit the manufacturers of Dynamos and Motors, Electrical Street Railways, Electrical Repair Shops, Electrical Supply Jobbers, to take our line of Insulation on Commission. Good live salesmen can add twelve to fifteen hundred dollars per year to their incomes. All necessary samples can be carried in pocket.

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We will exchange typewriters, all guaranteed and send subject to trial, in exchange for merchandise. What will you offer?

BROWNE & MANSFIELD, 245 Broadway, New York.

FLY WHEELS.

One 11 foot, in halves, 10 tons weight. One 8½ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

FOR SALE.

500 up-to-date 98 wheels in lots of 25 or more. Bargain for spot cash buyers.

Address

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FOR SALE.

48-lb. T Rails.

All or any portion of 173 tons of first quality new rails of standard section. Immediate delivery. Special price.

Address,

WM. WHARTON, JR. & CO., Incorp.,
25th St. & Washington Ave., Philada., Pa.
Or, HARRINGTON, ROBINSON & CO.,
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Well known first-class commission agents, established in Brussels, desire agency for articles likely to have market on the Continent. Engineering, electrical or hardware trade preferred. Best references. Apply to

"V. H. B., 1899,"
Care *The Iron Age*, New York.

NO. 32 CLIFF ST.,

four story brick building, to let from May 1; suitable for the iron business.

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MANUFACTURERS.

GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

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FOR SALE.

An old established jobbing and retail stock of hardware, in a prosperous Western city of 20,000 people and a railroad center. Established in 1866 and the owner now wishes to retire, after 33 years' continuous and prosperous business. Will be sold cheap. No trade. Address "No. 117," care *The Iron Age*, Commercial Building, St. Louis.

Of Interest to Capitalists.

A competent mechanical engineer or machinery salesman with capital to take an interest in a live concern with a good line of standard tools who desire to add another large line. A splendid opportunity. Address

"STANDARD TOOLS,"
22 Pickering Bldg., Cincinnati, Ohio.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

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Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

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Large stock always on hand.
☞ Send for list of Second-Hand Machinery.

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AMERICAN RAILWAY SUPPLY COMPANY,

Manufacturers of

Baggage, Hotel and Time Checks, Metal Figures and Letters and everything in the line of Stamped Metal Work.

24 PARK PLACE, NEW YORK.

FOR SALE.

A Lot of Mining Machinery in First-Class Condition

One 550 H P Tandem Compound Corliss Engine, with Plunger Condenser, and heavy driving gear.

One Lidgerwood Hoisting Engine, link motion, with 14 x 18 in cylinders and 10 ft. divided drum.

One slide valve Engine, cylinders 16½ x 36 in., with 15 ft. balance wheel.

One slide valve Engine, with 16 in. cylinders, 42 in. stroke.

One Morris County Air Compressor, cylinders 12 x 18 in.

23 Ingersoll-Sargent Air Drills, 2 in., 2¾ and 3¼ in. cylinders.

Two Boilers, 5 ft. diameter, 17 ft. long, with 60 3¼ in. flues.

Two Boilers, 5 ft. diameter, 18 ft. long, with 57 3¼ in. flues.

Two Boilers, 4 ft. 6 in. diameter, 14 ft. 6 in. long, with 68 3 in. flues.

One Boiler, 4 ft. diameter, 15 ft. 6 in. long, with 48 3 in. flues.

One Boiler, 4 ft. diameter 13 ft. long, with 54 3½ in. flues.

One Locomotive, built by H. K. Porter Co., weighing 3½ tons, 5 in. cylinders, 6 in. stroke, gauge 2 ft. 4 in.

Also Cameron, Knowles, and Blake Steam Pumps, in various sizes.

For further particulars and prices please address

THE MT. PLEASANT MINING CO.,
68 Wall St., N. Y. City.

FOR SALE

Bessemer Plant and Blooming Mill

of the North Branch Steel Company.

Plate Mill For Lease

SITUATED AT : : : : DANVILLE, PA.

The Steel Plant is entirely new and practically ready for operation; it contains two 5-ton vessels and a 32-in. reversing Blooming, Slabbing and Billet Mill. If desired, its 28-in. Plate Mill, which is situated only a short distance from the Slabbing Mill, could be leased.

Danville is on the line of the Catawissa Branch of the P. & R. R. R. and the Bloomsburg Branch of the D., L. & W. R. R.; is directly across the river from and connected by bridge with South Danville, through which a branch of the P. R. R. runs, and is within 12 miles by rail of Northumberland, through which the Northern Central Branch of the P. R. R. passes.

There is a good home market for a part of the product of the above plant, and the starting of it up would make Danville an excellent location for a Tin Plate Works. Full information may be obtained of

THE NORTH BRANCH STEEL COMPANY,
25th St. and Washington Ave., - PHILA., PA.

FOR SALE.

Quantity of old Machinery, Shafting, Pulleys, Cupolas, Converters, Oven Cars, Trucks, etc. For particulars address

AMERICAN STEEL CASTING CO.,
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AN ENGLISH HOUSE

which could command a large trade is desirous of negotiating for American Agency for United Kingdom for manufacturers' Steel Plates, Angles and Shipbuilding material generally. To pass usual British tests. Apply in confidence "BOX 175/21," London. Office of *The Ironmonger*, 42 Cannon Street.

For Sale, Cheap.

A new steam crane for standard gauge track, self propelling, capable of lifting easily ten tons at any point within a radius of 16 feet without the use of track clamps. Materials and workmanship first-class in every respect. Address

THE ALLENTOWN ROLLING MILLS,
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Scrap Iron WANTED.

CASH PAID FOR

Wrought Scrap Iron, Cast Scrap Iron and Old Horse Shoes.

ADDRESS

D. M. OSBORNE & CO.

Manufacturers Farm Implements,

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FOR SALE.

A valuable Manufacturing Plant. The building is 40 x 100 feet, two stories. Good Engine and Boiler and well equiped with valuable machinery and tools for manufacturing Vapor Stoves or other Iron products.

Satisfactory reason for selling.

Address A. MUNSON, MEDINA, OHIO.

Henry A. Hitner's Sons,

Wholesale Scrap Iron & Metal Dealers, Riggers and Wreckers.

We are always in the market to buy and dismantle Iron Buildings, Bridges, Abandoned Railroads, Rolling Mills, Blast Furnaces, Ruins of Fires and all Structures of this character.

Gaul & Sergeant Sts., - Philadelphia, Pa.

SALESMEN!

Do you want a Side Line that will not conflict with your regular line?—Easy to sell—Good commission—Can carry samples in pocket—Sells principally in Lumber Regions. Samples free. Write for particulars and give references.

J. L. KEITH & SON,
OLDTOWN, ME.

For Rent, with Heat and Power.

A three-story brick factory, 40 x 60, on side track. Light on all sides. Five railways and two rivers. Town of 15,000. Address

THE MARIETTA PAINT & COLOR CO.,
Marietta, Ohio.

Texas Shop Cheap

Well equipped foundry, boiler and machine shops suitable for engine and railroad work. Contain wheel press, planers and shapers; lathes 15 to 44 in. swing up to 26 ft. bed. One and one-half acres of land. Big lot of patrons and business good the year round. Reason for selling—disability and old age.

Address A. DEMARCE, Texarkana, Texas.

FOR SALE.

Gould Planer, 17 in. x 6 ft.
Prentiss Lathe, 15 x 60 in.
Leeds Gap Lathe, 36 in. x 14 ft.

Old material of all kinds bought and sold.

WALSH'S SONS & CO.,
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
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Telephone Call, 897 18th St.

Morton B. Smith,

243 FRONT ST., NEW YORK.

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.

Correspondence solicited.

For Sale.—Relaying Steel Rails.

5,000 tons 56 and 60 lb. first-class Relaying Steel Tee Rails with splices.

350 tons 35 lb. Relaying Steel Tee Rails with splices.

100 tons 48 lb. Relaying Steel Tee Rails with splices.

300 tons 60 lb. first-class Relaying Steel Tee Rails with angle bars at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ill.

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section 60 lbs. per yard, first-class relaying steel Rails, with splices.

800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.

Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

WM. H. PERRY CO.,
Providence, R. I.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co.

253 BROADWAY, N. Y.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited.

C. BOTJER, 405 Newark St., Hoboken, N. J.

WANTED

A HYDRAULIC PRESS, capable of pressing 48 inches square by 3 to 6 ft. high, and exert a pressure of 1700 to 2000 tons; must be cheap and in good order.

KEASBEY & MATTISON CO., Ambler, Pa.

FOR SALE.

The Somersworth Machine Co.

The extensive plant and business of The Somersworth Machine Company, located at Dover and Salmon Falls, N. H., is offered for sale.

The Dover plant is located sixty-eight (68) miles from Boston and forty-eight (48) miles from Portland, and consists of 19 buildings and 9 acres of land, situated alongside the tracks of the Boston & Maine R. R., from which a spur track runs to the loading and unloading points of the shops. The shops have a first class power plant of 80 H.-P., and the electric light, heating and sprinkling systems are complete.

The Foundry has two (2) large cupolas one 48 in. diameter and the other 60 in. diameter. It is built of brick, 200 by 50 ft. with monitor roof 33 ft. high. The core room is 40 x 40 ft. and the core sand room is 30 by 20 ft.

The Machine Shop is of brick, one story, with the monitor roof 26 ft. high, and is 270 by 70 ft., and is well equipped with machine tools and machinery for a job shop.

The John A. White Co. Machine Shop is of brick, one story, with monitor roof 25 ft. high, and 100 by 70 ft. In this department there has been manufactured wood working tools and machinery well known to the trade.

The Stove Works at Salmon Falls are situated on the Western and Northern divisions of the Boston & Maine R. R., and are 74 miles from Boston and 48 miles from Portland. The plant has been in operation since 1848, manufacturing heating and cooking stoves, furnaces, sinks, hollow ware and all castings pertaining to the trade, and has put upon the market over 60 different patterns of stoves and there are 100,000 in use in New England to-day.

The plant consists of 22 buildings, 40 acres of land and 8 tenement houses containing 14 tenements. Has an electric light system, and a nickel plating plant installed last year. The property is in excellent condition and has a well established and profitable business.

The above described plant of the Somersworth Machine Co., including the stock, patterns, machine tools and good will, will be sold as a whole or divided up as may seem desirable. For full particulars and descriptive list of the Real Estate, Machine Tools and Machinery and the manufactured product of the business, address the undersigned,

B. FRANK NEALLEY, Assignee, Dover, N. H.

Turret Head Screw Machines For Sale.

Desiring to reduce the number of hand Screw Machines that we have so that we can use the space for other business, we offer for sale the following machines, which can be seen on the premises during working hours.

No. 059 Garvin, No. 1, wire feed, ⅜ in. hole in the spindle
No. 062 Garvin, No. 1, wire feed, ½ in. hole in the spindle.
No. 063 Garvin, No. 1 with wire feed, 13-32 in. hole in the spindle.
No. 064 Garvin, No. 1 with wire feed, 13-32 in. hole in the spindle.
No. 065 Garvin, No. 1 with wire feed, ½ in. hole in the spindle.
No. 066 Jones & Laughlins No. 2, ⅜ in. do., with wire feed.
No. 075 Garvin, No. 2 with wire feed, 1 in. hole in the spindle.
No. 078 Garvin, No. 2 with wire feed, 1 in. hole in the spindle.
No. 080 Pratt & Whitney No. 2 with wire feed, 11-16 in. hole in the spindle.
No. 081 Pratt & Whitney No. 2 with wire feed, 11-16 in. hole in spindle.
No. 82 Garvin No. 3 with back gear and friction clutch 1⅜ in. hole through the spindle.
No. 090 Garvin No. 3 with back gear and friction clutch with 1⅜ in. hole through the spindle.
No. 091 Garvin No. 3, do., with 1⅜ in. hole through the spindle.
No. 086 Garvin No. 3, do., with 2⅛ in. hole through the spindle.
No. 092 Pratt & Whitney Hub Forming Machine, first operation.
No. 093 Pratt & Whitney Hub Finishing Machine, second operation.
No. 100 Pratt & Whitney Screw Shaving Machine No. 2.
No. 101 " " " " " "

THE NEW BRITAIN HARDWARE M'F'G CO.,
New Britain, Conn.

BAKER BLOWER.

No. 5½ Baker Blower in good order, now at Robert Wetherill & Co.'s Shops, Chester, Pa. Replaced by two No. 5 Root's Blowers. Apply to

P. H. and F. M. ROOTS CO.,
109 Liberty Street, New York.

$4000

cash will buy old established Hardware and Painters' Supply business. Stock worth over $4500. Fixtures, horses, wagons, etc. Six miles from New York City Hall. Reason other business. Address "SUBURBAN," care *The Iron Age*, New York.

FOR SALE CHEAP.

Two or three Iron Carriages for Core Ovens. Capacity 10 to 30 tons.

BRIDGEPORT DEOXIDIZED
BRONZE & METAL CO.,
Bridgeport, Conn.

For Sale—For Cash Only.

A1 clean stock Hardware, Stoves, Sewer Pipe, Queensware and Tinshop. Established 36 years in same name. Good paying business. Best location in city and fine up-to-date store. Good town of 5500 and growing. Water Works, Sewerage, Electric Lights and Gas. Invoice $5500. Good reason for selling. Address

BOX 1001, Macon, Mo.

FOR RENT.

Part of office in modern office building, particularly well situated for any one trading in metals. Typewriter, stenographer and telephone. Rent reasonable. Address "METALS,"
Care *The Iron Age*, New York.

FACTORY
FOR SALE OR RENT.

Almost new, three stories, 100 x 25 ft., with ell. Located on Railroad, one block from depot, Middletown, Conn. Engine, Boiler, Steam Heat, all in first-class order.

N. C. STILES, Watertown, N. Y.

FOR SALE.

An exceptional opportunity to buy a Hardware Stock of about $10,000.00, in a city of Massachusetts of over 84,000 inhabitants. Satisfactory reasons given for selling. Address

BIGELOW & DOWSE CO.,
Boston, Mass.

FOR SALE.

Two ten ton Morgan Engineering Co.'s Ladles with bales, in condition equal to new. Apply

FRANKLIN STEEL CASTING CO.,
Franklin, Pa.

FOR SALE.

Seven Nail Machines of four different sizes and making all sizes of wire nail from 4-penny to smallest. Only in use about six months. Address

SHELDON PARKS, Attorney,
Cleveland, Ohio.

FOR SALE.

To settle an estate, the Foundry known as The Oak Hill Manufacturing Co., with Patterns, Samples, Flasks, Machinery, &c., complete, for manufacturing Light Castings. Water Power and Steam. For particulars, inquire of

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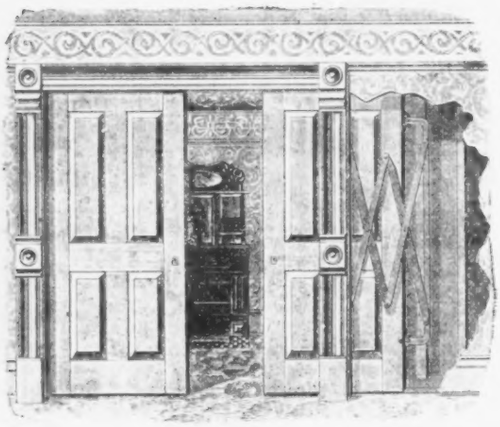

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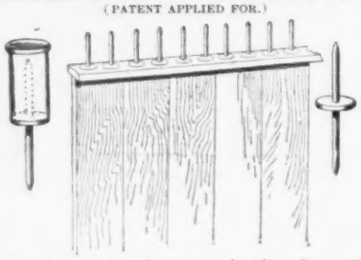

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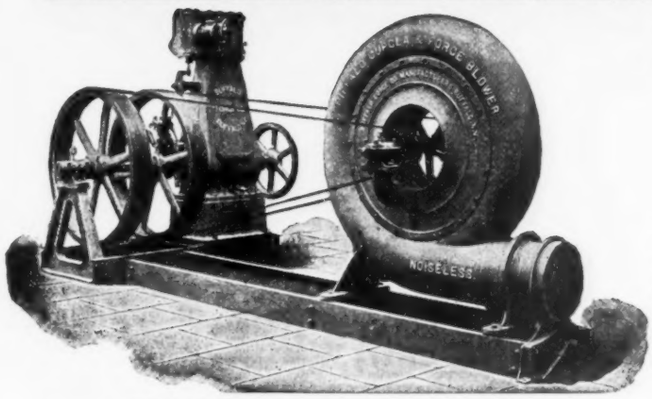

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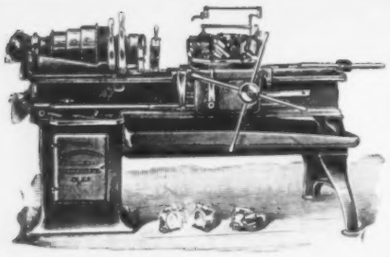

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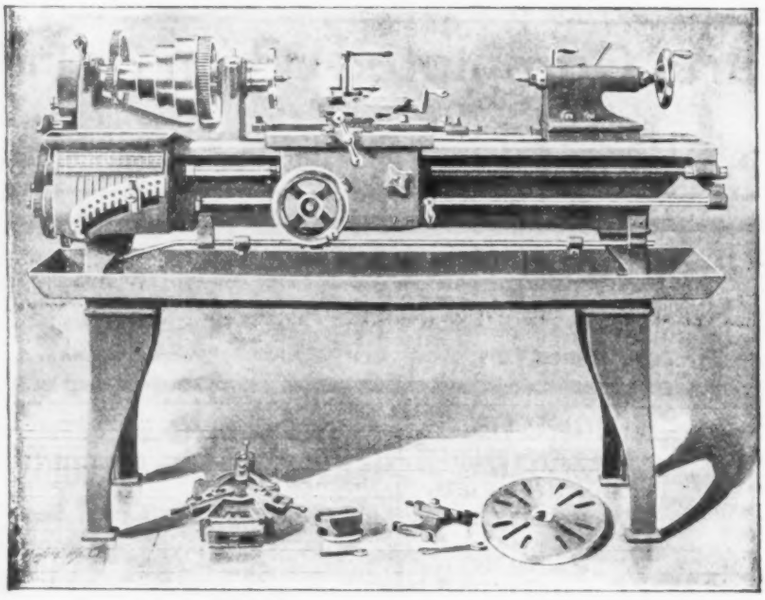

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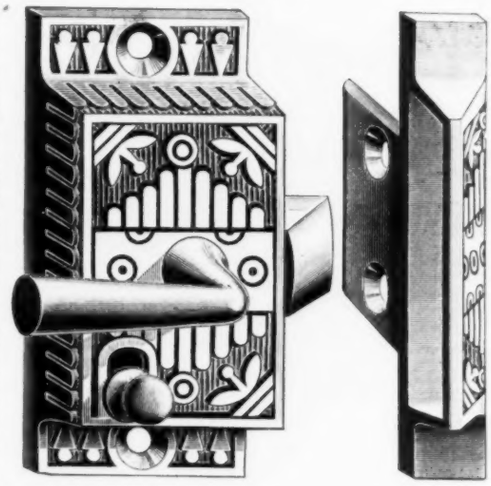

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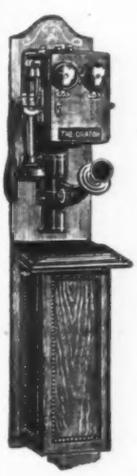

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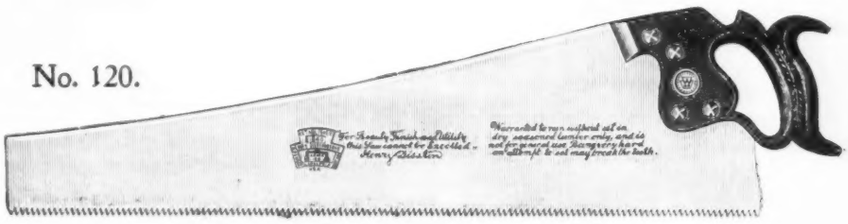

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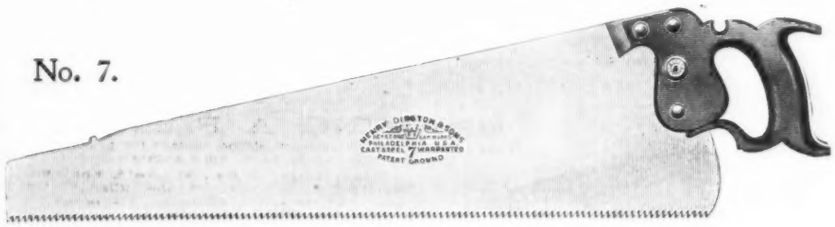

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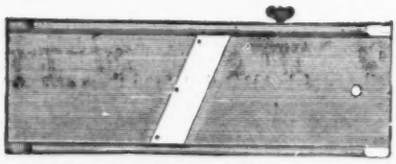

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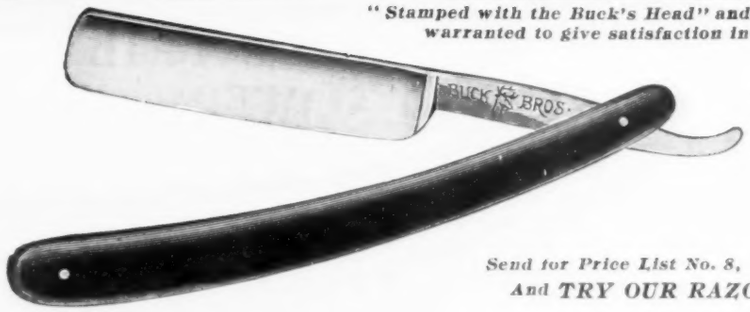

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"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

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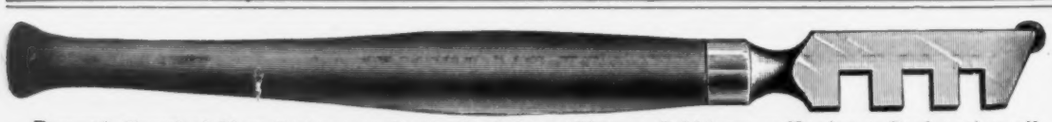

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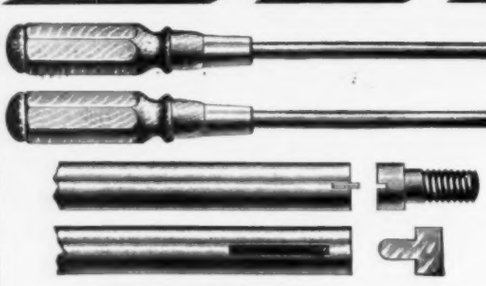

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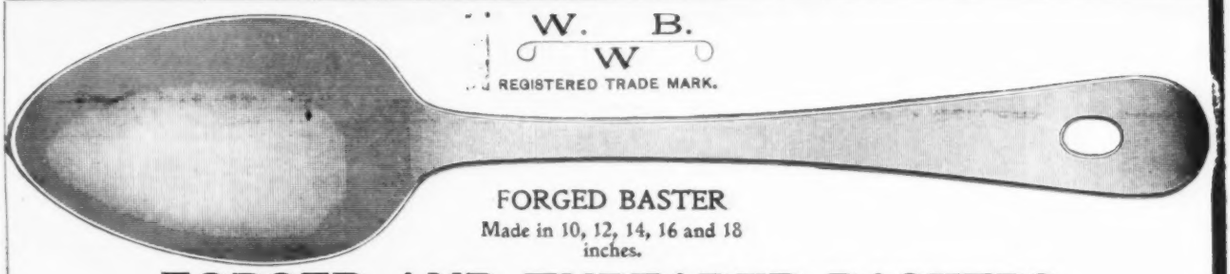

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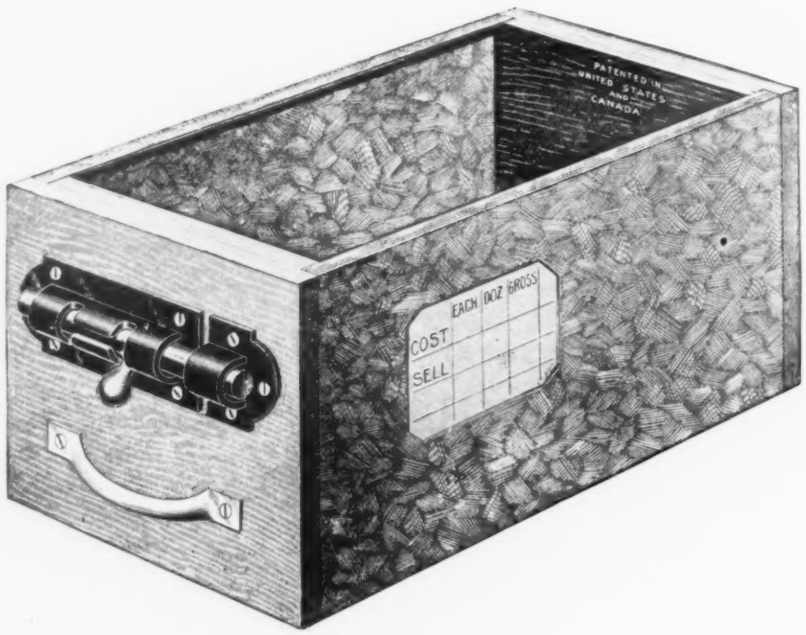

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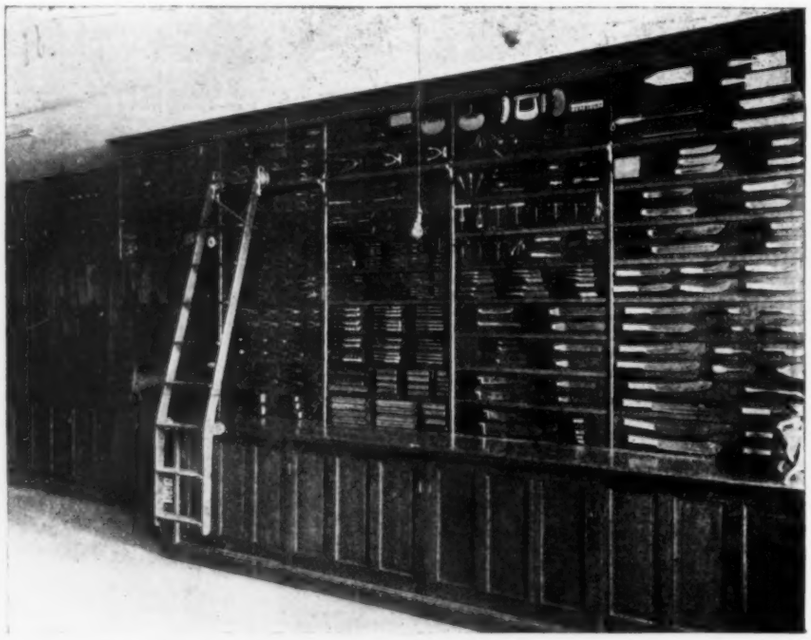

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ICE AXES, SAWS, SCALES, and
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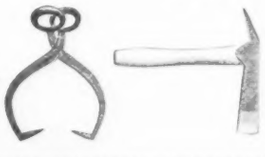

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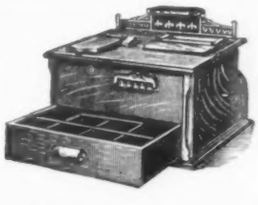

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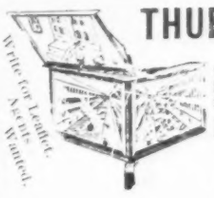

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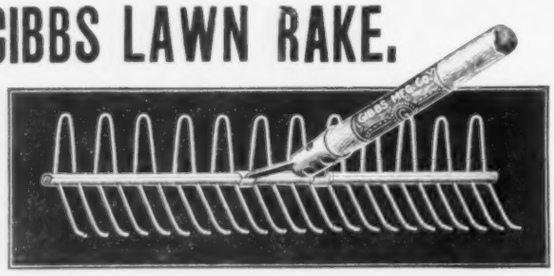

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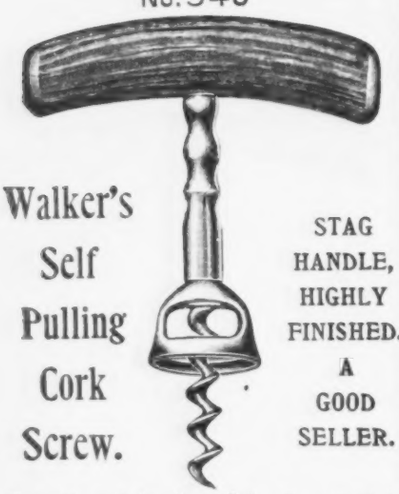

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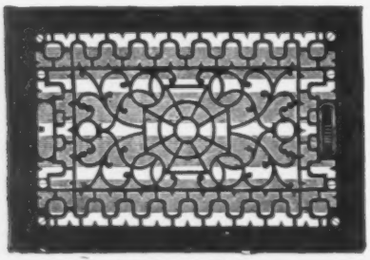

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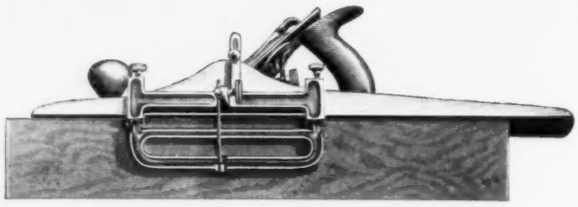

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Flat surfaces carefully ground. Whole tool nickel plated.

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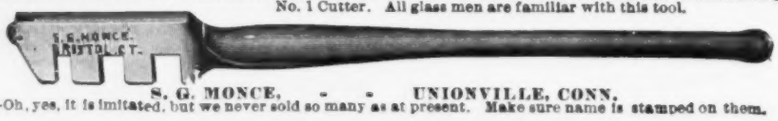

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The Rapid Grinding and Pulverizing Coffee Mills are the only Mills made that Pulverize Perfectly. Thirty sizes and styles from $1.25 to $50.00.

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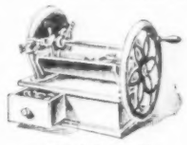

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Always sweet and clean. **Steel** Shovels, Scoops, and Spades.

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FULL WEIGHT. Will not absorb grease. STUBBS GAUGE

Spiders, Kettles, Griddles, Stew Pans, Scotch Bowls, HIGHLY POLISHED AND TINNED.

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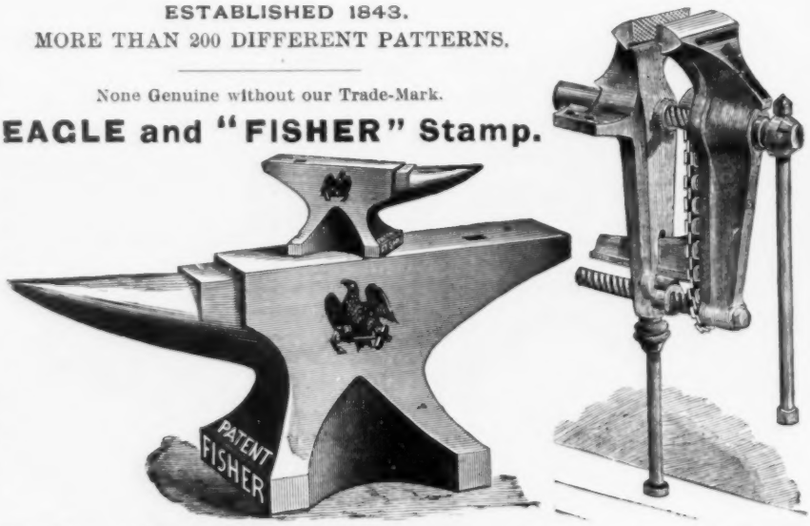

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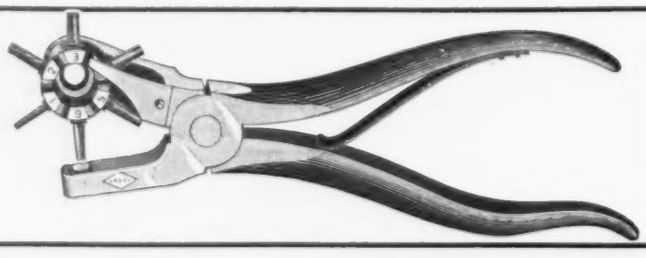

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...Every Stone Guaranteed...

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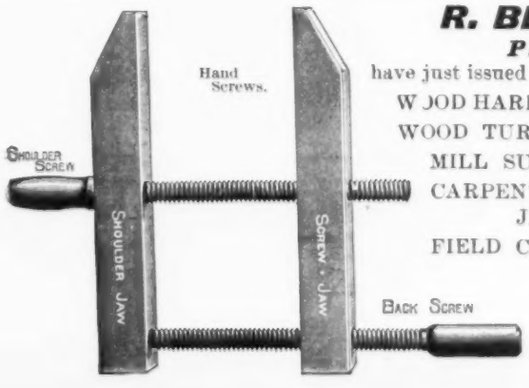

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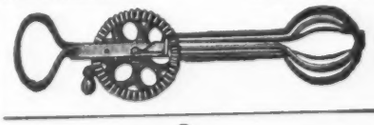

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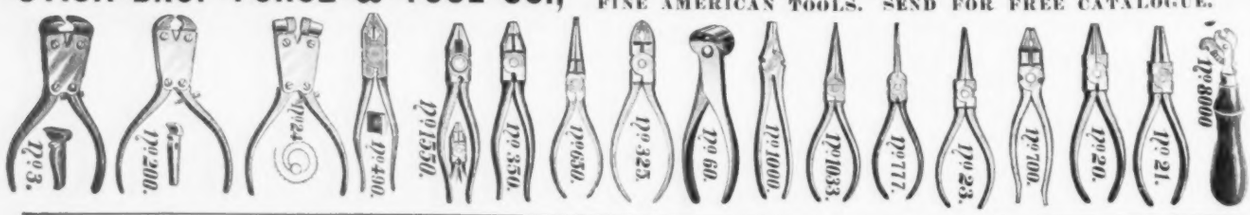

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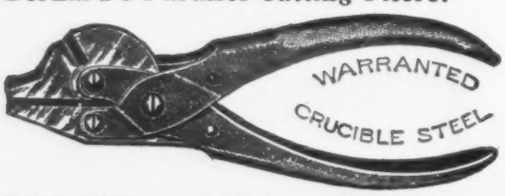

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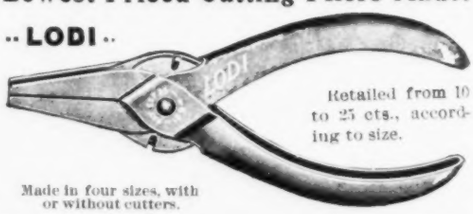

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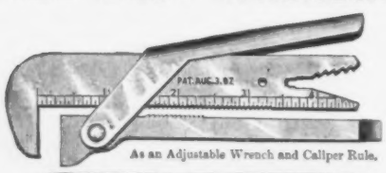

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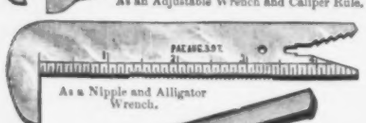

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FIVE TOOLS IN ONE.

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Perfectly Rigid.
Case Hardened.
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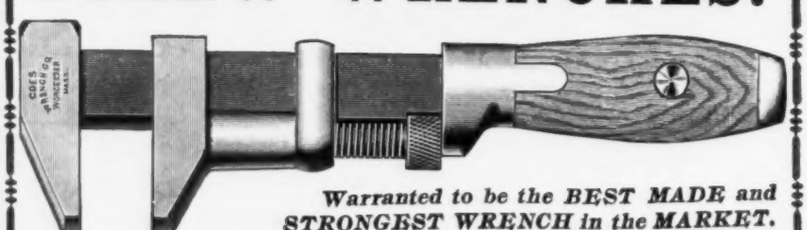

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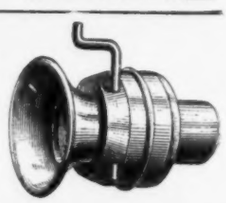

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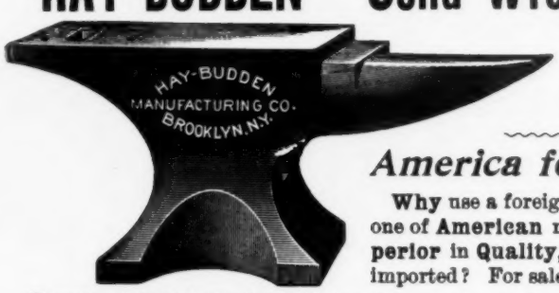

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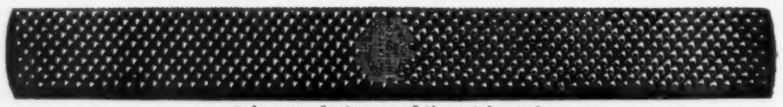

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COMBINATION WRENCH.

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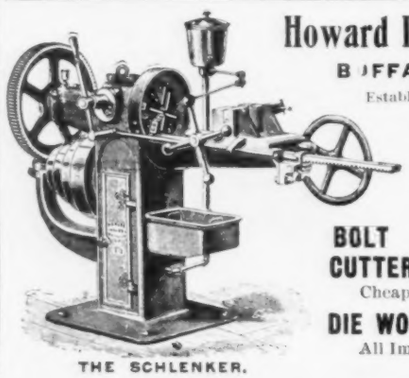

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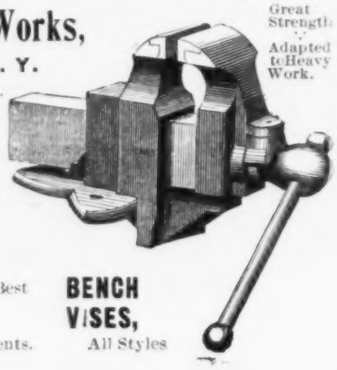

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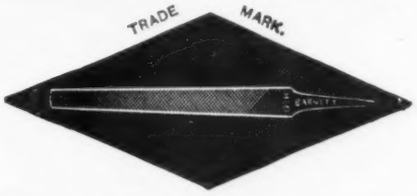

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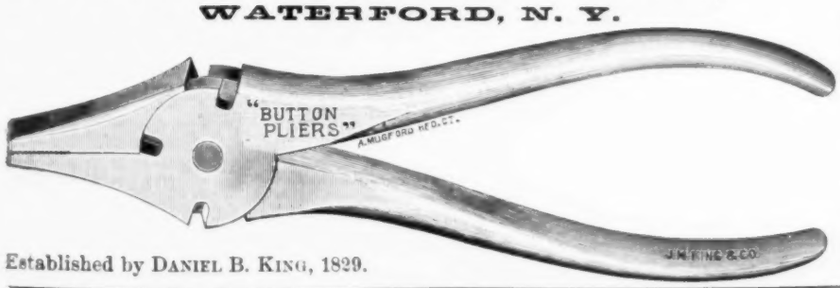

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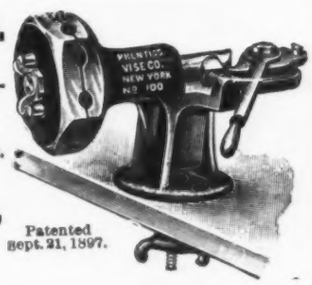

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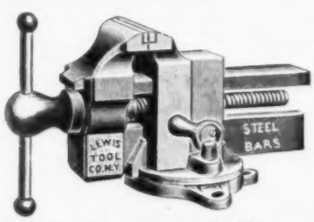

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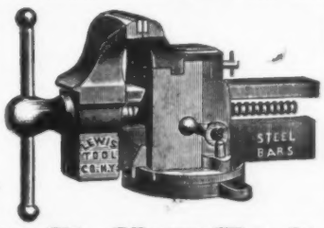

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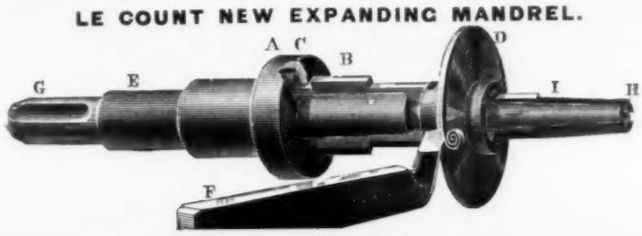

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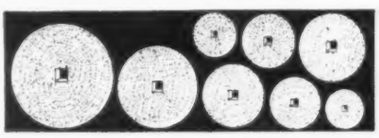

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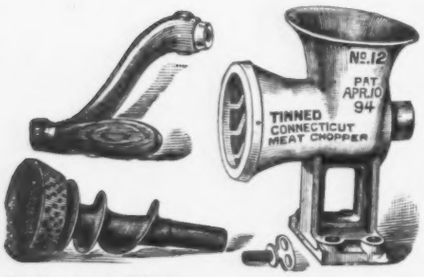

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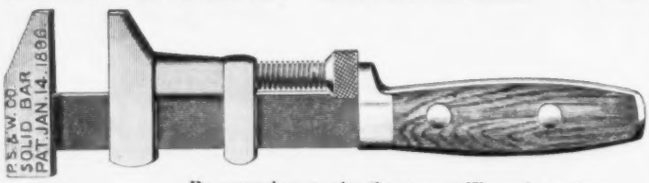

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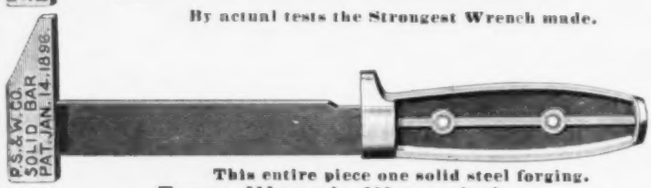

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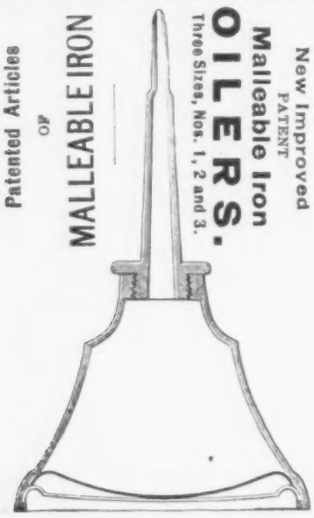

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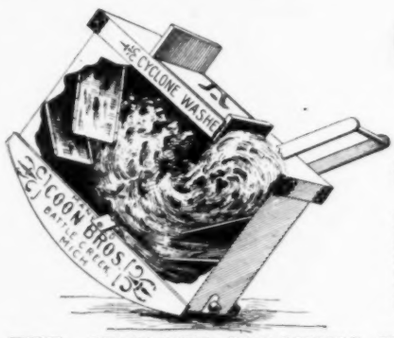

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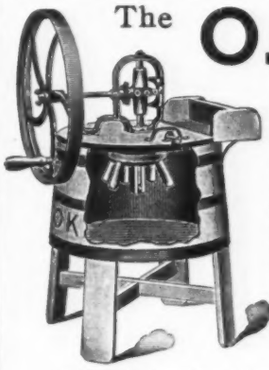

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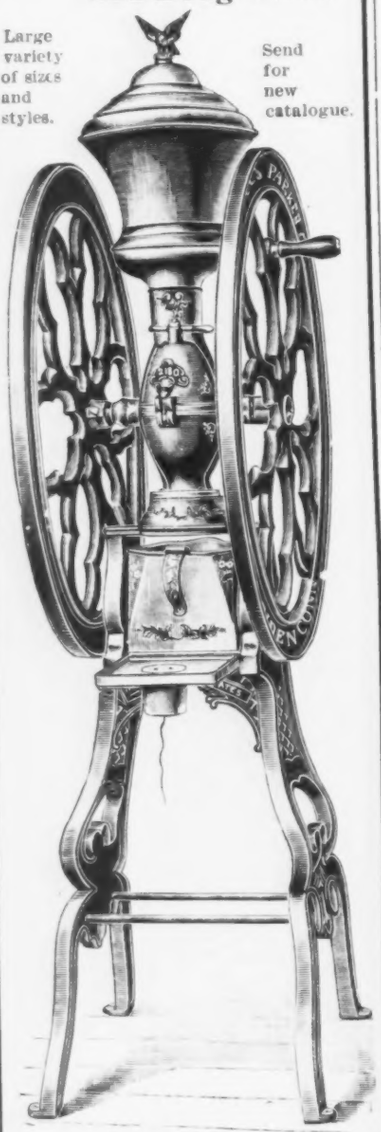

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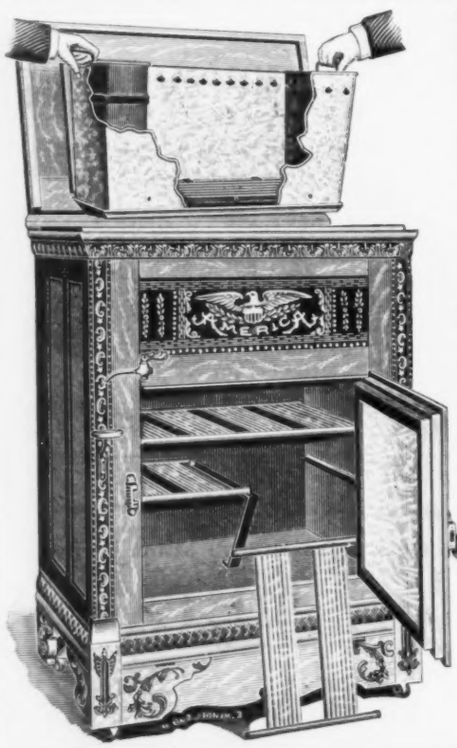

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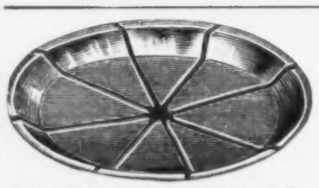

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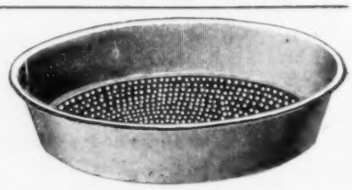

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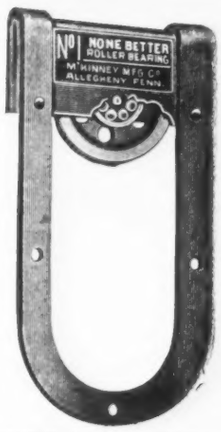

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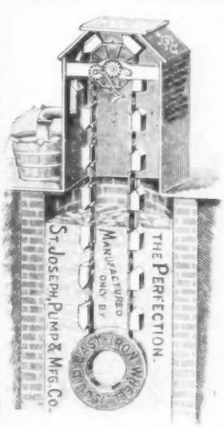

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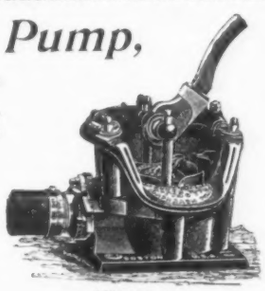

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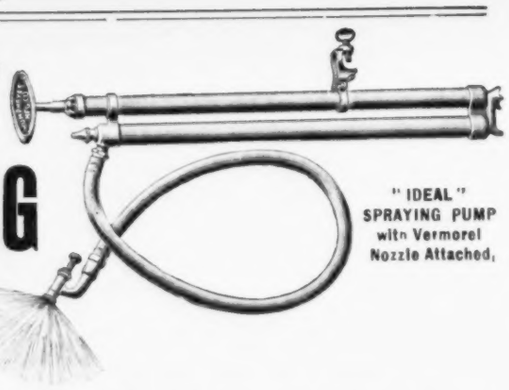

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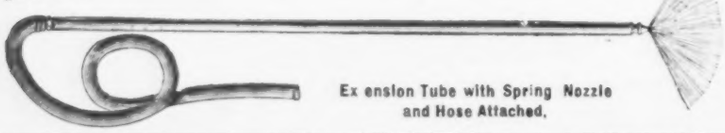

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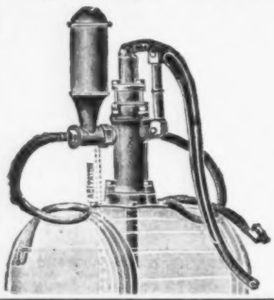


IS THE CONTENTS OF

"How to Spray, When to Spray and What Pumps to Use,"

AN ILLUSTRATED BOOK FREE.

Your stock of Spray Pumps should be complete. The season is at hand.

We make everything for spraying.

Ask about our "Pomona" and "Kerowater" Sprayers.

THE GOULDS MFG. CO., Seneca Falls, N. Y.

Warerooms, 16 Murray St., New York.

SEND FOR COMPLETE CATALOGUES.

REFRIGERATORS

We have branch offices for the sale of

"White Mountain" Refrigerators

In Boston, New York City, Columbus, Minneapolis, Denver, San Francisco, Dallas, Texas, and St. John, N. B.

Maine Manufacturing Co.,
NASHUA, N. H.

Not in the Combination

Write for prices on

MRS. POTTS SAD IRON HANDLES.

M. SCHRAYER'S SONS & CO.,
49 Blue Island Ave., Chicago, Ills.

WM. H. LITTELL, Eastern Representative, 127 Duane St., New York.

A. SON RICE, Missouri River, 100 E. Lake St., Chicago.

THE TOLER

Liquid Door Check and Spring

PERFECTION ATTAINED AT LAST.

Entirely new in style and mechanism, **strong simple and effective**, giving in results all the best achievements of other checks, together with new and valuable features only to be found in this.

It has a vertical case, with openings only at the top.

It has no plugs or caps screwed to the cylinder ends. It cannot leak. There is no way for the liquid to escape after the Check is applied.

The piston is idle during a greater part of the opening and closing of the door, thus saving the wear on all parts.

It is made of the very best of material through out.

It works to perfection, closing the door quickly and gently.

It is easily taken apart by anyone; no returning to the factory for anything. This saves time and money. The working of the Check will speak for itself.

Regular finish, Gold Bronze. No extra price for Silver Bronze or Dead Black when so ordered. Furnished Plated in Brass, Nickel, Copper or Silver, Plain or Oxidized, at a reasonable extra charge. No extra charge for Brackets where needed.

Manufactured by

JOHN TOLER, SONS & CO.,

NEWARK, N. J., U. S. A.

W. H. QUINN & CO., General Agents, No. 103 Chambers St., NEW YORK.

IRON and LEAD SASH WEIGHTS

Ventilators, Valve Stop Boxes, Hydrant Boxes, Meter Boxes, Washers, Special Sizes Iron and Lead Weights to Order and all Kinds of Castings.

ENTERPRISE FOUNDRY CO.,

Tel. 5292. CINCINNATI, O.

12 Good Points.

SOLID, SIMPLE, STRONG, SECURE, SENSIBLE, SMOOTH.

SELLER, SCREWS STEEL, SAVING, SET UP, SATISFIES.

SEND FOR PRICE-LIST.

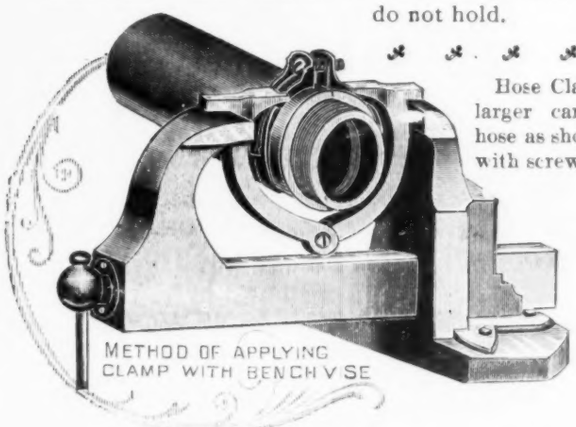
Stowell Mfg. & Fdy. Co.,

SOUTH MILWAUKEE, WIS

WM. H. LITTELL, Eastern Agent,
127 Duane St, New York.

A CURE FOR LEAKY HOSE

is for the dealer to order all hose coupled with ***SHERMAN CLAMPS,*** as that will remedy many leaks that come from wire bands that stretch or cast clamps that break and do not hold.



Hose Clamps 1 in. and larger can be put on hose as shown in cut, or with screw driver alone.

Small sizes ½ and ¾ in. for lawn hose are applied to hose with screw driver alone.

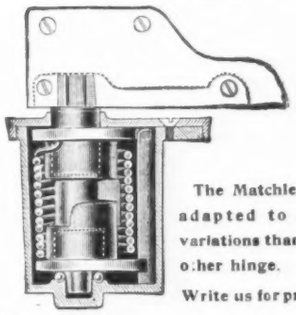
SOLD BY ALL JOBBERS.

Manufactured by **H. B. SHERMAN MFG. CO., Battle Creek, Mich.**

THE MATCHLESS

Double-Acting Floor Hinge.

BALL BEARING.



The Matchless is adapted to more variations than any other hinge.

Write us for prices.

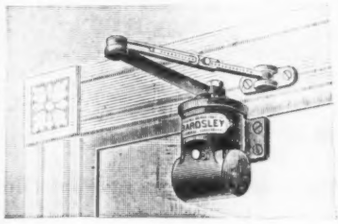
LAWSON MANUFACTURING CO.,

MAIN OFFICE:

Chicago. Milwaukee, Wisconsin. New York.

THE "BARDSLEY"

Oil Door Check and Spring



HAS new and improved features; is free from packing friction; the checking power can be released when the door is near the closing point; more oil can be added when needed without taking it from the door and it can be readily taken apart with the aid of a screw-driver when repairs are necessary.

Size A,	price	each,	$3 50
" B,	"	"	4 00
" C,	"	"	5 00
" D,	"	"	6 00
" E,	"	"	7 00

LIBERAL DISCOUNTS TO THE TRADE.

JOS. BARDSLEY,

147 to 151 Baxter St., NEW YORK CITY.

NEW CRESCENT

HOSE MENDER.

IT'S FLAT—Won't cut the hose; mender and bands are of brass; pliers of iron, handsomely Japanned. Simple, convenient. Screw menders tear the lining and wire bands cut. Our flat bands make secure couplings and positively will not injure the hose. Are rapid sellers.

Send for prices and catalogue of these goods and our line of

Lawn Sprinklers, Bath-Room Fixtures, etc.

CRESCENT BRASS & IRON COMPANY,

DETROIT, - MICH.

The MILBRADT ROLLING Step Ladders

that were put up 15 years ago are still working entirely satisfactorily. Since then they have been improved a great many times, and we now only repeat the language of our customers when we say: "We do not see how you can make any further improvements on the ladders, as they are perfect in every respect."

The ***Milbradt Rolling Step Ladders*** are made to order and to fit all kinds of shelving, in various styles to suit all purposes, and are especially adapted for Hardware Stores. Write for Catalogue.

MANUFACTURED BY

G. A. Milbradt & Co.,

1922 and 1924 N. Broadway, St. Louis, Mo.

.....AND.....

JOHN CALANDER, St. Paul, Minn.

Pullman Sash Balance Co.,

MAKERS OF THE

"Pullman" Hardware Specialties

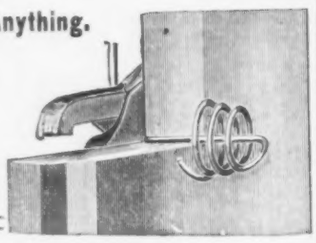
MAIN OFFICE AND WORKS,

Rochester, N. Y., U. S. A.

The Klondike Sample Holder

Holds Anything.

Display your goods and increase your sales.

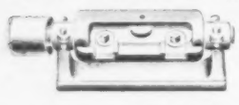


Samples removed or replaced instantly. Hence, no tarnished articles to sell at reduced prices. Write for free samples and prices to

N. M. BRINKERHOFF,

Gibsonburg, Ohio.

C. & F. WIRE STRAIGHTENER.



Straightens wire from No. 3 to No. 20. It is 11 inches long, 8½ high and 5 wide. Weight 25 pounds.

Send for Circular.

CHANDLER & FARQUHAR, - - BOSTON, U. S. A.

THE

Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for **15 years.**

Write Us for Prices.

MORLEY BROTHERS,

123 Tilden Ave., - - SAGINAW, MICH.

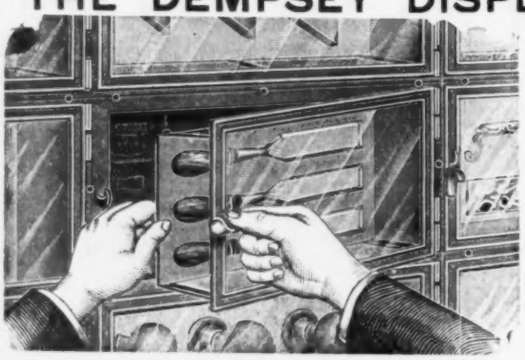
THE BICYCLE STEP LADDER.

Especially adapted for Hardware Stores

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**

Eastern Agent, H. N. YOUNGS, 8 Clinton Place, New York City. New York City and vicinity, E. J. HUSSEY & CO., 80 John St., New York City. California, JOHN WOODLOCK, 154-156 First St., San Francisco, Cal. North Western States, HOWE SCALE CO., Portland, Ore., Texas and S. W., ED. FOY, Dallas, Tex.

THE DEMPSEY DISPLAY DOORS



Save samples from Dust, Moisture and Rust. Detachable Sample Boards save time, worry and mixing stock. We make a full line of Hardware Fixtures, Cutlery Cases, Bolt Cases, Screw Cases, Sample Holders.

Dempsey Mfg. Co,

Offices, FAYETTE, MO.

FACTORIES,

Cleveland O., and Fayette, Mo.

INTERCHANGEABLE
LOCK-CORNER SHELF BOXES.
Screw Cases, &c.
FOR THE HARDWARE TRADE
A. H. GREEN,
22 Park Place, New York.

HARDWARE SHELF BOXES.

Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request. We also make a general line of Paper Boxes.

THE JESSE JONES PAPER BOX CO.,

615 and 617 Commerce St., Philadelphia.

Dumb Waiters.....

that don't keep you waiting.

Simple; smooth-running noiseless. All sizes, capacities and styles. Hardware dealers can sell them.

THE STORM MFG. CO.

Send for catalogue. NEWARK, N. J.

LIVE HARDWARE MEN USE
PERFECT SHELF BOXES
WE MAKE
PERFECT SHELF BOXES
WRITE FOR
CATALOGUE AND PRICES.
C. P. MOORE,
RAVENSWOOD, W. VA.

WRIGHTSVILLE HARDWARE CO.,

Manfrs. of

Gate, Blind and Shutter Hinges, Gate Latches, Frame Pulleys, Casters, Shelf Brackets, Sash Lifts, Drawer Pulls, Hooks, Thumb Latches and other goods.

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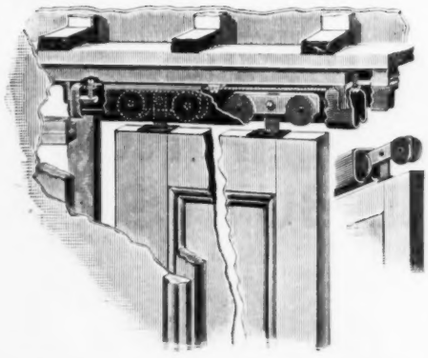

60,000

Sets of **COBURN** Hangers sold in 1898.

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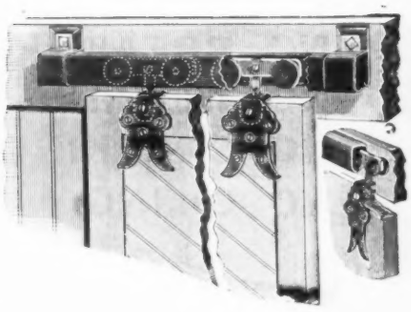
HOLYOKE, MASS.



UNITED STATES STEEL LOCK Co CLINTON, IOWA.

Sole makers of the

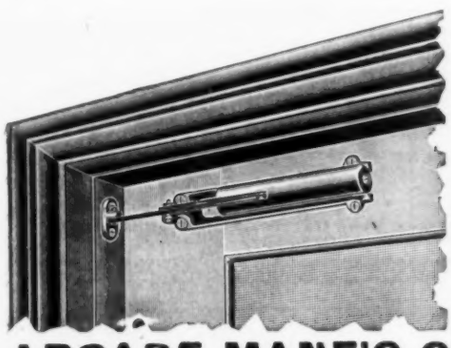
WARNER LOCKS

LOCKS.

Cold Rolled Steel,
Accurate in Construction,
Unsurpassed in Quality.

Hardware.

Artistic in Design,
Elegant in Finish,
Moderate in Price.



THE WARNER . . . SCREEN DOOR CHECK.

An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

GET OUR NEW CATALOGUE AND PRICES.

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The Walda Sectional Window Weight

Square and Round weights. Hang exactly from centre. Only 10 inch pockets required. Eliminates use of lead weights.

The Hardware Dealer

with one-sixth the stock required in one-piece weights can fill any order. Weights crated with 100 lbs. in a box, both plainly marked.

The Contractor

saves time, money and delay by balancing windows exactly at once.

SEND FOR CIRCULAR.

Barney & Reed M'f'g Co.,

85 Water Street, - BOSTON, MASS.

Simplex Time Recorder

So named because it is simple in construction, in operation and in reading the record.

A Great Time Saver

Cultivates promptness and saves disputes. Registers by the push of a button. Nothing more. One hundred men can register in one minute on one recorder. Adapted to large or small concerns. No keys, checks, cards, tape or ink ribbon. For SIMPLICITY, COMPACTNESS, DURABILITY and QUICK REGISTRATION, absolutely without a rival.

Full description for the asking.

HEYWOOD BROTHERS AND WAKEFIELD COMPANY,

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N. B.—For prices, state number of your employees.

Grand Rapids ALL STEEL **Sash Pulleys.**

Fasten Without Screws. Save Money and Time. Samples free.

Grand Rapids Sash Pulley Co.,

1 Pearl St., - Grand Rapids, Mich.

Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

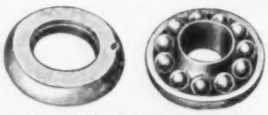
Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

NO BREAKING.
NO WEARING DOWN.
NO CREAKING.
NO OILING.

STANLEY'S BALL-BEARING STEEL BUTTS.



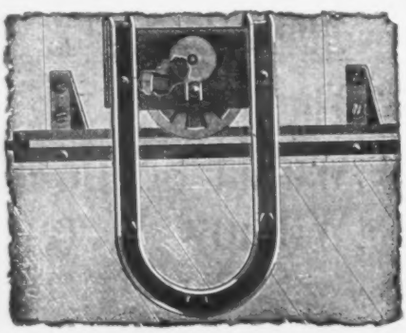
(Cut of Washer, Full Size.)

Our New Artistic Booklet, just out, tells all about them.

The Stanley Works, Dept. F, NEW BRITAIN, CONN. 79 Chambers St., N. Y.

Celebrated STAR BRAND
JACK CHAINS,
SAFETY, PLUMBERS' and LADDER CHAINS,
ESCUTCHEON PINS.

Now made by
The Turner & Seymour Mfg. Co.,
TORRINGTON, CONN.
Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware and Fancy Metal Goods.



The New Union Steel Hanger WITH THE Lawrence Sinuated Wheel.

THE LAWRENCE STEEL WHEEL
consists of two sinuated steel discs, extending to within five-sixteenths of the circumference and the point of sinuation projecting from each disc to the opposite, forming an inside tread to fit all Bracket Rails.

THE UNION HAS AN ENDLESS RUN WITHOUT FRICTION.

THE UNION STEEL CHANNEL BAR with our New Raised Bearing gives an even surface for the Bolt to rest on. **The only Rail which will not sag vertically nor warp horizontally.**

THE STRONGEST AND BEST HANGER FRAME KNOWN.
Apply for Circulars and Prices.

LAWRENCE BROTHERS, - STERLING, ILLINOIS.
Manufacturers of Steel Strap Hinges, Door Hangers, Pulleys, and other Hardware Specialties.

Galvanized Awning Slide Rods.

Galvanized by Improved Process, insuring Perfect Finish.
Now is the time to buy before prices go still higher.

....WRITE FOR PRICES....

Manufactured by Garland Chain Co., Rankin Station, Pa., U.S.A.

Eastern Sales Agents:
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AUTOMATIC SCREEN DOOR CATCH.

These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. Wanted counter sample furnished with first order of 2 dozen catches. Ask your jobbers for them. If they don't keep them, write us.

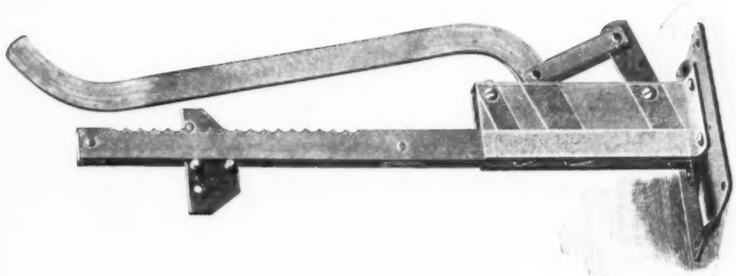
THE AUTOMATIC DOOR CATCH CO.,
135-137 Lake St., Chicago, Ill.

MADE ON THE PRINCIPLE OF A SQUARE KNOT.

CANNOT BE PULLED OR PRIED APART

Remember this when ordering
TIE-OUT CHAINS.
ONEIDA COMMUNITY, LTD., Niagara Falls, N. Y., U.S.A.

LANE'S
Steel Carriage Jack.



No. 1 Jack, to lift 900 pounds.
" 2 " " 1800 "
" 3 " " 4000 "

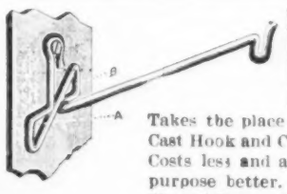
Manufactured by
Lane Brothers Co.,
POUGHKEEPSIE, N. Y.

THE
READING STANDARD
BLOCK (Patented).

This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
READING, PA.



PRATT'S SPRING BIRD CAGE HOOK

Takes the place of the old Cast Hook and Coil Spring. Costs less and answers the purpose better. Made of Tinned Drawn Steel Wire.

BILL FILE,

Made from single piece Tinned Spring Wire Neat, durable. Answers every requirement for a bill file. Closely packed 2 dozen in a box, and cheap.

MADE BY
Wm E. Pratt Mfg. Co.,
CHICAGO,

Mfrs. of Foot Scrapers, Tyler Post Hole Augers, Calf Weaners, etc.

HALT!

HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys.

MANUFACTURED BY
THOMAS MORTON.
65 Elizabeth Street,
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CHICAGO SPRING BUTT COMPANY.

TRADE C.S.B.CO. MARK

MANUFACTURERS OF
SPRING HINGES,
DOOR SPRINGS,
DOOR PULLS,
KICK OR
PUSH PLATES,
HOUSE NUMBERS,
B. D. HANGERS.

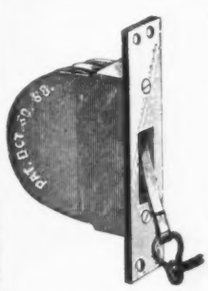
RELIABLE GOODS.
PROPER PRICES.
PROMPT DELIVERY.

SEND FOR CATALOGUE.
CHICAGO. NEW YORK.

SILVER LAKE SASH CORD
Has been the standard for thirty years.

Every Hank Bears the Above Label.
SEND FOR SAMPLE.

SASH WEIGHTS.
E. E. BROWN & CO.,
McKean and Meadow Sts.,
PHILADELPHIA, - - PA.



10 YEARS
Caldwell Sash Balance.
It stands the test of time.
Caldwell Mfg. Co.,
Rochester, N. Y.

CLASPS THE CLOTHES ON THE LINE.
U. S. Spring Clothes Pin, will not damage fabrics

Send for Prices

United States
Clothes Pin Co., MONTPELIER, VT., U. S. A

The
LIGHTNING
BEST CHEAP CHURN MADE.

Send for Catalogue

Agents Wanted.
PORTER BLANCHARD'S SONS CO.
Nashua, N. H., U. S. A.

PORTER SCREEN MANUFACTURING CO.,
Manufacturers of
Door and Window Screens,
CATALOGUE FREE. Burlington, Vt.

Lighting By Acetylene. Electric Furnaces, Generators and Burners. Contents.—Introduction, Acetylene, Dangers of Acetylene, Electric Furnaces, Generation of Acetylene, Impurities of Carbide and Purification of Acetylene, Generators, Acetylene Lamps, Acetylene Burners, Author's Experiments, Conclusion, Fire Regulations, List of U. S. Patents. By WM. E. GIBBS, M. E.....$1.50

For sale by David Williams Co., 232 William St., N.Y

GEM NAIL CLIPPER.

Cleans.
Cuts.
Files.

It is a neat, well made, nickel plated article. Put up attractively and sold cheaply. Send for circulars and prices.

H. C. COOK & CO., Ansonia, Conn., U. S. A.

McCABE
Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
SEND FOR CATALOGUE.
McCabe Hanger Mfg. Co.,
533-543 West 22d St.
New York.

"PIONEER" FIFTY POINT CARBON STEEL TUBING

The uniformity obtained from our process of manufacture is especially desirable for bicycle purposes.

We invite our customers to come in on our floor and select their tube—test specimens from the general run, and to take any piece they choose to select as a sample of excellence.

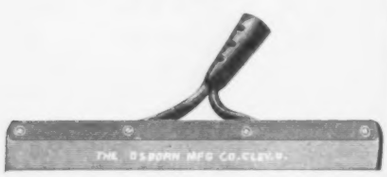
NO SPECIALLY PREPARED SAMPLES.

THE POPE TUBE CO.,
HARTFORD, CONN.

"Pioneers" in Correct Composition.

We should be pleased to quote you discounts on application. Send for printed matter.

Metal Head Floor Scrapers
or Squilgees.



The head is made of malleable iron and steel securely bolted together, with extra heavy rubber of good quality.

List and discounts on application.

The Osborn Manuf'g Co.,
Cleveland, O.

BRUSHES— FDY. SUPPLIES.

Manufacturers of BELLS of all Descriptions
ALSO BICYCLE SPECIALTIES.

SIGNAL GONG.

BEVIN BROS. MFG. CO., East Hampton, Conn.
Established in 1838.

STEEL FOR PRESSED, STAMPED, DRAWN AND PLATED WORK.

ESTABLISHED 1877. INCORPORATED 1884.

The WILMOT & HOBBS Mfg. Co.

MANUFACTURERS & EXPORTERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER
& OPEN HEARTH, HOT ROLLED, ANNEALED & PICKLED, ALSO
BRIGHT COLD ROLLED "SWEDOH" STEEL.
UNEXCELLED FOR PRESSED, STAMPED,
DRAWN & PLATED WORK.

WILMOT'S PATENT "CLINCHER" CYCLE TUBING
STRONGER THAN THE SEAMLESS.

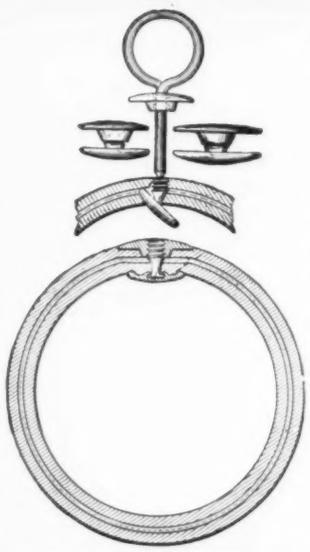
WE MAKE A SPECIALTY OF
WILMOT'S PATENT SPRING STEEL BEDSTEAD TUBING
OF SUPERIOR FINISH, LIGHTNESS & STRENGTH.
ENGINEERS', & STEAMBOAT SETS, "COPPERIZED" ALSO NICKEL,
BRASS-PLATED & JAPANNED.

BRANCH OFFICE:
POSTAL TELEGRAPH BLDG., NEW YORK.

MAIN OFFICES & WORKS:
BRIDGEPORT, CONN., U.S.A.

COLD ROLLED STRIP STEEL.

Patent "Clincher" Fifty Carbon "SWEDOH" Spring Steel Cycle Tubing.



GLIDDEN'S METALLIC REPAIR OUTFIT

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THIS is the smallest, neatest, most compact and practical repair outfit ever offered to the public. Complete in a tin box 1½ inches long, 1 inch wide and ¼ inch thick. It will repair a puncture at once, without the use of cement, and any woman or child can use it. The plug is made of metal with a **hinged head, which can be forced into a much smaller opening than one with a stationary head.** Two sizes of plugs are furnished with each kit, which will fit ordinary punctures; also a cutter is furnished, to be used when the puncture is too small to admit the plug.

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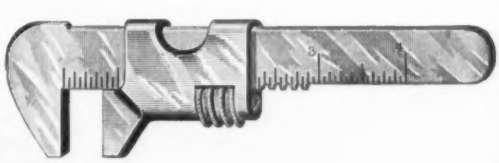

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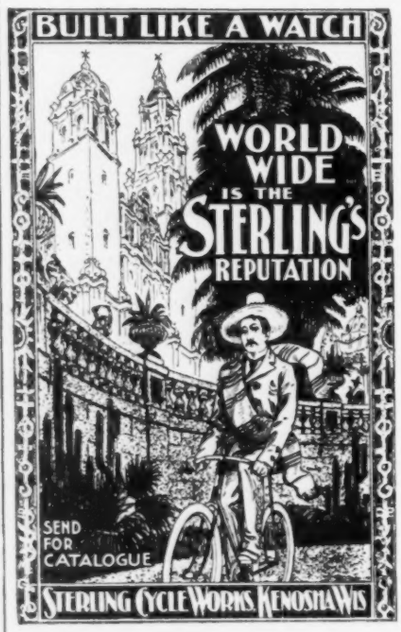

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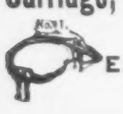

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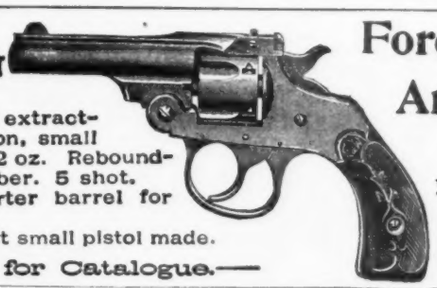

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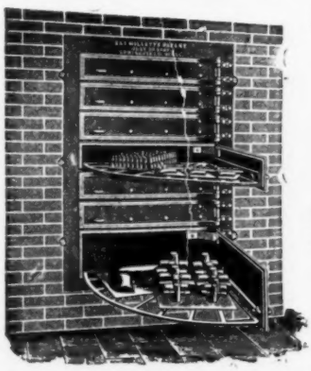

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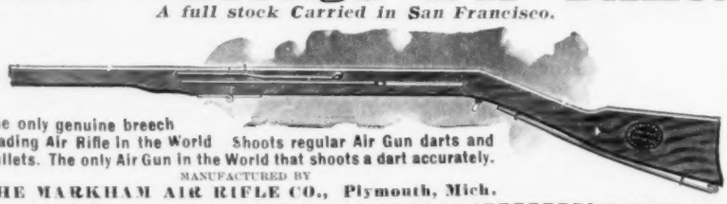

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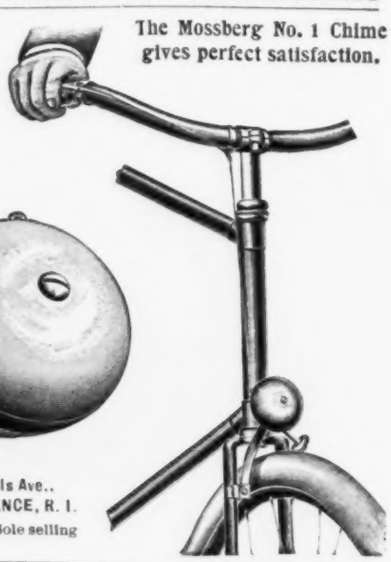

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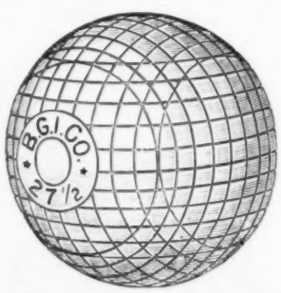

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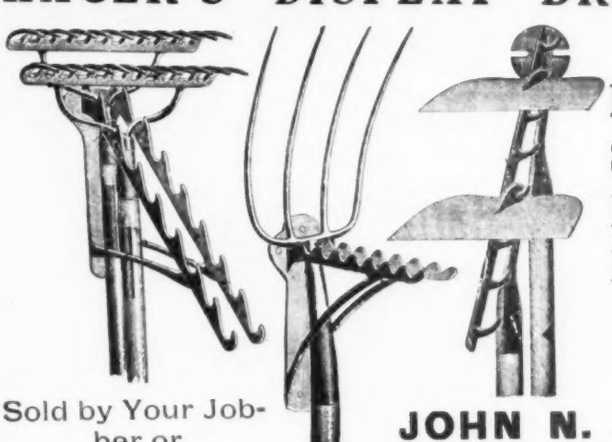

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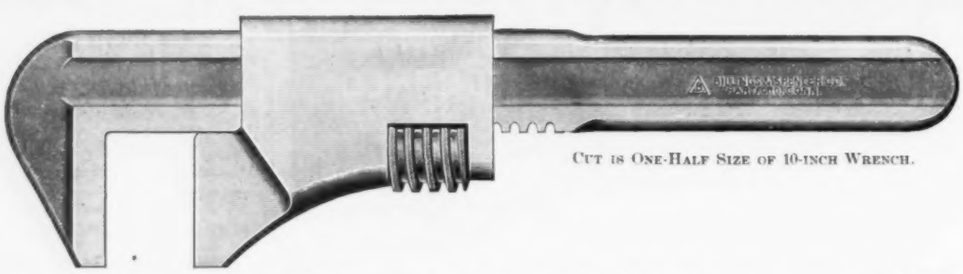
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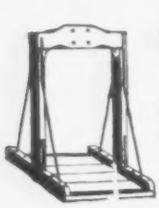

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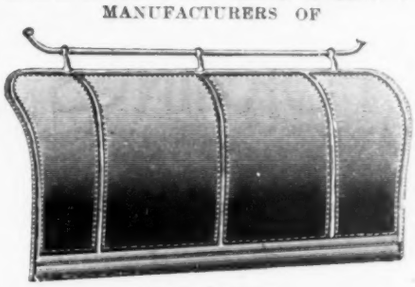

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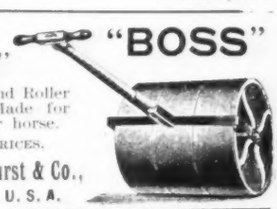

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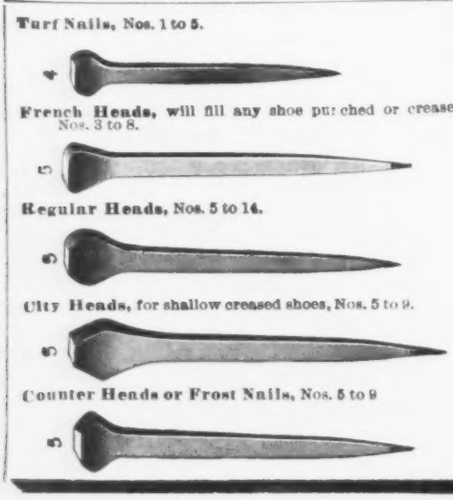

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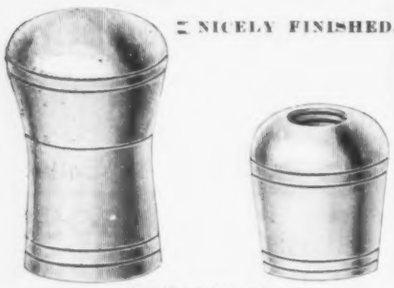

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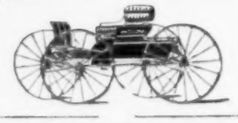

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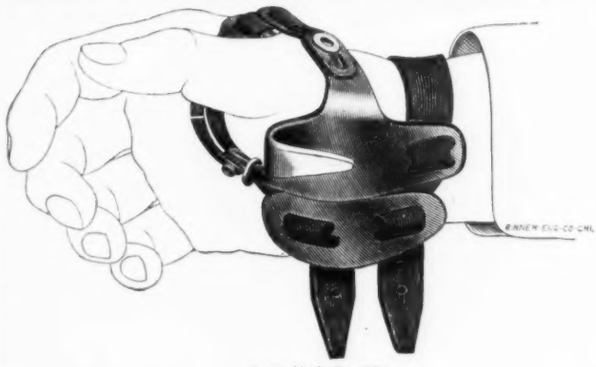

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SAVES HALF THE LABOR.
HUSKS THE EAR WITH ONE PASS.
PROTECTS THE HAND AND WRIST.
ADJUSTS ITSELF TO FIT THE HAND.

Made from the best quality of steel and leather. Get sample and price before making contracts.

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NO LOAD

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THE ECONOMY BOLSTER SPRING

WITH PATENT EXTENSION ENDS, gives a perfect spring with either light or heavy load. Outer coils only act with light load; as the load increases the other coils and elliptic come into action. Manufactured by

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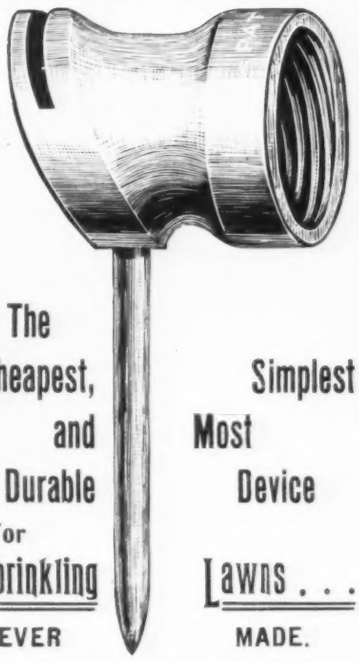

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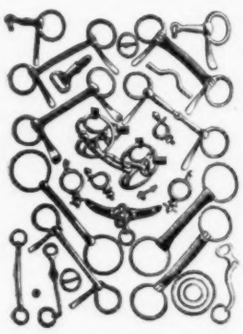

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Extra Family and Hotel Size No. 150

Has a.... BEARING Which No Other Egg Beater has,

Preventing the Cogs on LARGE WHEEL from Slipping by the Cogs on SMALL GEARS.

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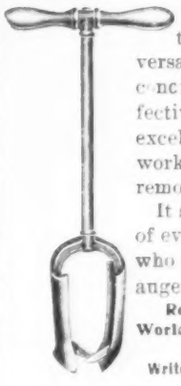

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HIGH GRADE LAWN MOWERS.

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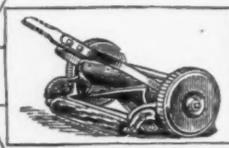

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Six Sizes, 2, 4, 6 and 8.
ROLLER CORN HUSKER and FODDER SHREDDERS.
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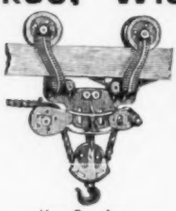

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This size, No. 1, weighs less than 5 lbs. and will lift 800 lbs. No. 2 weighs just 5 lbs. and will lift 1,500 lbs. The lifter may be raised or lowered to any point on the standard. Wherever it is stopped it becomes instantly locked. It is loosened again instantly by raising the lever to an upright position. The load may be raised gradually to the desired height by working the lever up and down. Made in two sizes, Nos. 1 and 2.

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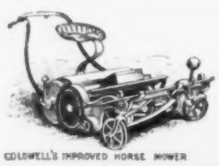

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HIGH GRADE
HAND & HORSE
LAWN MOWERS
ONLY
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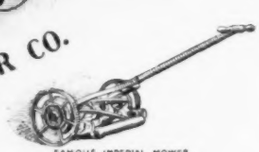

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GENUINE "SCOVIL HOE."

Manufactured Solely by

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THE BLACK DIAMOND, SOLID SOCKET SHANK

Shovels and Spades.

BLACK DIAMOND—POLISHED.

G. 22.	D.	Handle,	Plain Back,	Square	Point	Shovels.
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G. 42.	Long	"	"	Square	"	"
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Quality and finish unsurpassed by any in the market.

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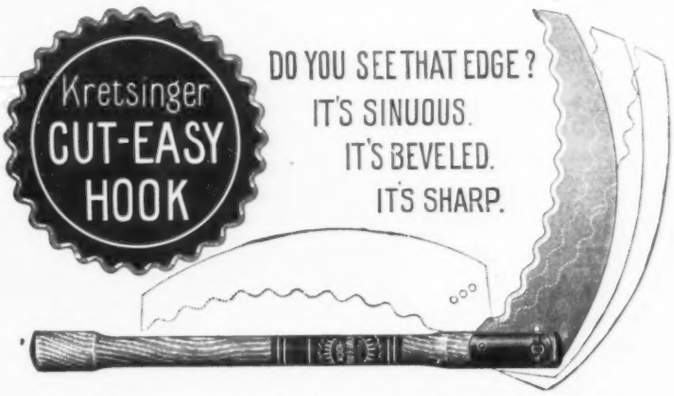

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Self-Sharpening

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Positively Non-Slipping.
Can be used on stock Shoes.
Calks are renewable at will.
Inexpensive and Durable.
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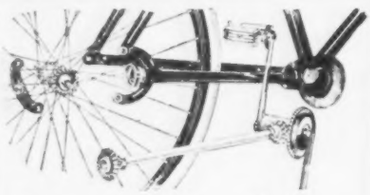

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The forward mechanism is now placed in an independent bushing or sleeve, which is inserted in the bracket and clamped in position. The gear adjustments, both front and rear, have been made entirely independent of each other, thus greatly simplifying the operation of bringing the gears to mesh.

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Chainless, - - -	$75
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A full line of Hay Tools and Hardware Specialties. Send for catalogue.

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Cost of softening less than Boiler Compound.

THE WEFUGO COMPANY,

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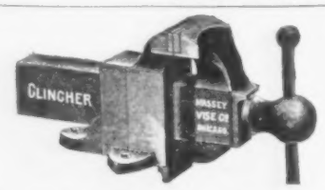

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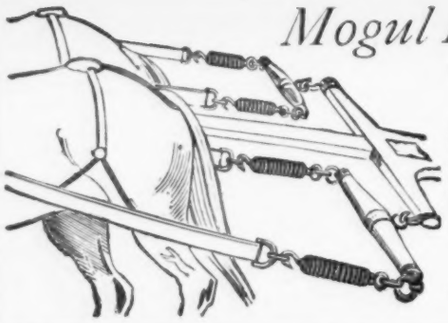

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Increases the power of the horse and avoids all straining and injuries to the shoulders. Attached to whiffletrees or collars.

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BETTER THAN ALL OTHERS.

Will cut loose or packed hay, straw, pea vines, etc., for feed, from stack, mow or bale, faster than any other knife.

Only Knife having an adjustable handle to suit right or left hand person.

Only Knife which has an evenly tempered blade.

It is the finest finished Knife. All leading Jobbers sell it.

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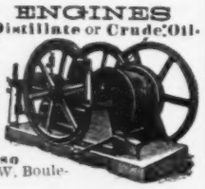

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Daimler Mfg. Co., Long Island City, N. Y.

Boiler Makers' Machinery.
Prentice Bros., Worcester, Mass.

Boiler Plates.
Lukens Iron & Steel Co., Coatesville, Pa
Seidel & Hastings Co., Wilmington, Del

Boiler Tubes.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
National Tube Works Co., McKeesport, Pa.

Boiler Tube Cleaners.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Boilers, Steam.
Babcock & Wilcox Co., 30 Cortlandt St.
Cahall Sales Dept., Pittsburgh, Pa.
Harrison Safety Boiler Wks., Phila., Pa.
Pollock, W. B. Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.
Chambers Bros., Philadelphia, Pa.

Bolt and Nut Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
Burdi t. O. C., Buffalo, N. Y.
Detrick & Harvey Mch. Co. Baltimore, Md.
Hoe and Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, Ohio.

Bolts.
Anthony Bates Mch. Co., Worcester, Mass.
Blake & Johnson, Waterbury, Conn.
Dunham Nut Co., Unionville, Conn.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Works, Rockford, Ill.
Shelton Co., Birmingham, Conn.
Smith, Thos. Co., Worcester, Mass.
Sternbergh, J. H. & Son, Reading, Pa.

Books.
Williams, David, Company, 232-238 William Street, N. Y.

Box Fixtures.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y

Box Straps and Corners.
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
Quincy Hdw. Mfg. Co., Quincy, Ill.

Boxes, Hdw. Shelf. &c.
Green, A. H. & Co., 22 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va.

Boxwood Sawdust.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Brackets, Shelf.
Atlas Mfg. Co., New Haven, Conn.

Brass and Copper.
Ansonia Brass & Copper Co., N. Y.
Bridgeport Brass Co., Bridgeport, Conn.
Davol, John & Sons, 100 John, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Hussey, C. O. & Co., Pittsburgh, Pa.
Plume & Atwood Mfg. Co., 29 Murray St., N. Y.
Randolph & Clowes, Waterbury, Conn.
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y

Brass and Copper Wire.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y

Brass Butt Hinges.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Tiebout, W. & J., 16 & 18 Chambers.

Brass Butts.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Founders.
Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co. Philadelphia, Pa.
Reeves, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.

Brass Goods.
Brass Goods Mfg. Co., 88 Chambers.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains.
Hungerford, U. T., Brass & Copper Co. 121 Worth St., N. Y.

Brazers.
White Mfg. Co., Chicago, Ill.

Bridge Builders.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.

Bronze, Manganese.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Bronze (Tobin).
Ansonia Bronze & Copper Co., 19-21 Cliff Street, N. Y

Brushes and Brooms.
Hendee Wire Brush Co., Milwaukee, Wis

Buckets, Rubber.
Cleveland Galvanizing Wks., Cleveland

Buggies.
Parry Mfg. Co., Indianapolis, Ind.

Builders' Hardware.
Reading Hdw. Co., Reading, Pa.
Stanley Works, New Britain, Conn.
U. S. Steel Hoist Co., Clinton, Iowa.

Bulldozers
Williams, White & Co., Moline, Ill

Butchers' Tools.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.

Butts and Hinges.—*See Hinges.*

Buyers' System.
Folding Paper Box Co., South Bend, Ind

Calipers and Dividers.
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.

Car Axles.
Roberts, A. & P. & Co., Phila.

Car Springs.
Scott, Chas. Spring Co., Phila., Pa.

Carbide of Silicon.
Carborundum Co., Niagara Falls, N. Y.

Carborundum Grains.
Carborundum Co., Niagara Falls, N. Y

Carborundum Wheels.
Carborundum Co., Niagara Falls, N. Y.

Carriage Hardware.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard Auburn, N. Y.
McKinnon Dash Co., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.

Cartridges.
Hungerford, U. T., Brass & Copper Co. 121 Worth St., N. Y.
Peters Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Carving Tools.
Buck Chas., Millbury, Mass.

Cash Recorders.
Hough Cash Recorder Co., Indian Orchard, Mass.

Castings, Atlas Metal.
Ferro-Carbon Castings Co., Philadelphia Pa.

Castings, Brass, Bronze and Copper.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S. & E. B. Co., Philadelphia, Pa.
Rowell, W. G. & Co., Bridgeport, Conn.
Ryan, J. J. & Co., Chicago, Ill.

Castings, Finished.
Franklin, H. H. Mfg. Co., Syracuse, N. Y

Castings, Iron.
Albany Foundry Co., Albany, N. Y.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Booth, The Lloyd Co., Youngstown, O.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Cheney, S. & Son, Manlius, N. Y.
Clark, John W., Albany, N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., N. Y. City.
Crane, Wm. M. Co., 1121 Broadway, N. Y
Enterprise Foundry Co., Cincinnati, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Lorain Foundry Co., Lorain, Ohio.
McNeal Pipe & Foundry Co., Philadelphia, Pa.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
National Foundry Co., Troy, N. Y.
New Brunswick Fdry. Co., New Brunswick, N. J.
Palmers & De Mooy Fdry. Co., Cleveland, O.
Phila. Roll & Mch. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, Ohio.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O
Turner & Seymour Mfg. Co., Torrington, Conn.
West Side Foundry Co., Troy, N. Y.
Wetherill, Robert & Co., Chester, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Castings, Malleable.
Acme Mall. Iron Works, Buffalo, N. Y.
Arcade Mall. Iron Co., Worcester, Mass.
Hammer & Co., Branford, Conn.
Jarecki Mfg. Co., Erie, Pa.
Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cements
Warner, Chas. Co., Wilmington, Del.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co. Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Chemists.
Stillman & Hall, Ltd., 15 Wall St., N. Y.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard, Porter Sons Co., Nashua, N. H

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.

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Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Cold Saws.
Lucas & Gliem, Philadelphia, Pa.

Collapsible Tubes.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Commercial Literature.
Maule, Francis L., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corn Huskers.
Milwaukee Hay Tool Co., Milwaukee, Wis
Wilcox Mfg. Co., Auroro, Ill.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.
Whitney, A. R. & Co. 71 B'way, N. Y.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis

Couplings, Compression.
Sennett Geo B. Co., Youngstown, O.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.
Whiting Fdry. Equipment Co., Harvey, Ill.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N.J

Cupolas.
Paxson, J. W. Co., Philadelphia, Pa.

Cupolas, Hot Blast.
Byram & Co., Detroit, Mich.
Whiting Foundry Equipment Co., Chicago, Ill.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston,
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.
Veeder Mfg. Co., Hartford, Conn.

Dampers.
Williams, A. C., Ravenna, O.

Dashes and Fenders.
McKinnon Dash Co., Buffalo, N. Y.

Decorated Tin Goods.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Adriance Mach Work, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Hey-Buddea Mfg Co., Brooklyn N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N.Y.
Trethewey, Samll & Co., Ltd., Pittsburgh
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg. Co., Fayette, Mo.

Display Racks.
Hager, John A., Ft. Atkinson, Wis.

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Bardsley, Jos., 147-151 Baxter St., N. Y.
Pullman Cash Ball Tube Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co, Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale Mch. Co., Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Grant Machine Tool Works, Cleveland, O
Lord Bros. Mfg. Co., Tiffin, O.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Stover Novelty Works, Freeport, Ill.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
York, S. M. Co., Cleveland, O.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co, Auburn N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
Kilborn & Bishop Co., New Haven, Conn
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co, Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn
Stiles, E. S. Press Co., Watertown, N. Y.
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I
Stiles & Parker Press Co., Brooklyn, N.Y

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor Conn.
General Electric Co., Schenectady, N. Y.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass
Taplin Mfg. Co., Forestville, Conn.

Electric Batteries.
Penn Electric Mfg. Co., Penn, Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.

Electrotypes.
St. Louis Electrotype Foundry, St. Louis Mo

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading, Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co, Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass
New Castle Engineering Works, Pittsburgh, Pa.
Riter-Conley Mfg Co., Pittsburg, Pa.
Sague, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Metz, Aug., 128-138 Mott St., N. Y.
Palmer Bros. Mfg. Co., Cos Cob, Conn.
Thompson & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Westinghouse Machine Co., Pittsburgh, Pa.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Toy, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Westinghouse Machine Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Seaman, D. C. & Co., Philadelphia, Pa.
Steward & Romaine Mfg. Co., Phila., Pa.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exporters.
Markt & Co., Ltd., 193-194 West St., N.Y

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets, Wooden.
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
National Pipe Bending Co., New Haven, Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn

Fence Posts.
Kokomo Fence Mch. Co., Kokomo, Ind.

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Bolles, J. E. Iron & Wire Works, Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
Detroit Fence Co., Detroit, Mich.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago, Ill.
Kokomo Fence Machine Co., Kokomo, Ind.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.
Union Fence Co., De Kalb, Ill.

Fencing Machines.
Kokomo Fence Machine Co., Kokomo, Ind.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md
McLain, E. S. & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh Pa

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Floor Scrapers.
Osborn Mfg. Co., Cleveland, O.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Foot Warmers.
Chicago Foot Warmer Co., Chicago, Ill.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hey-Buddeen Mfg. Co., Brooklyn N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fruit Jar Trimmings.
Consolidated Fruit Jar Co., 49 Warren St., N. Y.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M. Cleveland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Grass Hooks.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Besly, C. H. & Co., Chicago, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Landis Tool Co., Waynesboro, Pa.
Northampton Emery Wheel Co., Leed Mass.
Norton Emery Wheel Co., Worcester Mass.
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

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Grindstones.
Cleveland Stone Co., Cleveland, O.

Grindstone Hangers.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Palmer, I. E., Middletown, Conn.

Hangers, Door.
Chicago Spring Bunk Co., Chicago Ill.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Dilg & McGuire Mfg. Co., Richmond, Ind.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg. Co., Canton, Ohio.
Parker, Cass. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St. N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Sickels & Nutting Co., 35 Barclay St., N.Y
Wettmann & Singer, Ltd., 9-15 Murray St., N. Y

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Philadelphia, Pa.
Pfleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Carriers.
Milwaukee Hay Tool Co., Milwaukee, Wis.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Milwaukee Hay Tool Co., Milwaukee, Wis.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hog Rings.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.

Hoists, Air.
Pedrick & Ayer Co., Philadelphia, Pa.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila., Pa.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading.
Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoeneberg Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich

Hose Couplings, Air.
Pedrick & Ayer Co., Philadelphia, Pa.

Hose Menders.
Crescent Brass & Iron Co., Detroit, Mich
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Breaking Machines.
Wharton, J. S. Lovering, Philadelphia.

Ice Cream Dishes.
Clad, V. & Sons, Pulaski, Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lorentzen, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 1 Broadway N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Limited, McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O.

Job Lots, Hardware.
Browne & Manhard, 245 Broadway, N. Y.
Chicago House Wrecking Co., Chicago Ill.

Joist Hanger.
Van Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Keys, Machine.
Morton Mfg. Co., Muskegon Heights, Mich.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno. C., St. Louis, Mo.
Pfleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Tool Works, Cleveland O
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Windsor Machine Co., Windsor, Vt.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Mowers.
Coldwell Lawn Mower Co., Newburgh, N. Y.
Lawson Mfg. Co., Milwaukee, Wis.
New Mfg. Co., Canton, Ohio.
Philadelphia Lawn Mower Co., Phila., Pa.

Lawn Mower Sharpeners.
Wilcox Mfg. Co., Aurora, Ill.

Lawn Rakes.
Graham, John H. & Co., 113 Chambers St., N. Y.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Fan Lawn Sprinkler Co., San Francisco, Ill.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pfleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Reading Hdw. Co., Reading, Pa.
U. S. Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker Johns Mfg Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass.
Farrel Foundry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila., Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Pouiterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Thomas & Howe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machinery Woodworking.
Fay, J. A. & Co., Cincinnati, Ohio.

Machine Knives.
Loyd, John, 558-562 Water St., N. Y.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago Ill.
Hubbell, Harvey, Bridgeport, Conn.
Miles, F. S., Phila., Pa.
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester
Rhode Island Tool Co., Providence, R. I.
Worcester Mch. Screw Co., Worcester

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.
Thomas, B., Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Mica.
No. Carolina Mica Co., Boston, Mass.

Mica Chimneys and Canopies.
No. Carolina Mica Co., Boston, Mass.

Milling Machines.
Adams Co., Dubuque Iowa.
Becker, John, Mfg. Co., Fitchburg Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Grant Machine Tool Works, Cleveland, O.
Lucas & Gem, Philadelphia Pa.
Niles Tool Works, Hamilton, O.

Mill Supplies.
Bliss, R. Mfg. Co., Pawtucket, R. I.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Bower, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & Allg Perforating Co., Chicago Ill
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Petroleum.
Daimler Mfg. Co., Long Island City, N. Y.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.

Music Wire.
Frasse Co., 19 Warren St., N. Y.

Nail Clippers.
Cook, H. C. & Co., Ansonia, Conn.

Nail Machinery.
Atherton, Jesse Auburn, R. I.
Crescent Mfg. Co., Beneville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.
Snow, L. F., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Florence, Mass.

Nails, Cut and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Burners.
Brown, W. J., Philadelphia, Pa.

Oil Extractors
Reed & Curtis Mch. Screw Co. Worcester

Oil Heaters.—*See Oil Stoves*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. *(See Stoves, Oil, Vapor and Gasoline.)*

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct.

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Balls.
Woodruff, Walter W. & Sons Mt. Carmel Conn.

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Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paris Exhibition.
Markt & Co., 144 & 146 West St., N.Y.

Patent Solicitors.
Donaldson, W. & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann, 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburg, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Armstrong Mfg. Co., Bridgeport, Conn.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. B. Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
Midlar, C. & Son, Utica, N. Y.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Stanley Rule & Level Co., N.Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Niles Tool Works, Hamilton, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mf'g. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Post Hole Diggers.
Iwan Bros., Swastor, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tyler Wire Works Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws.
Stover Novelty Works, Freeport, Ill.

Power Hammers.
Beaudry & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dieneit & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Koos Punch & Shear Co., Cincinnati, O.

Power Transmitting Mach'nry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Adriance Mach. Works, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Phila. Mch. Tool Co., Philadelphia, Pa.
Stiles, E. S. Press Co., Watertown, N. Y.
Wrightsville Hdw. Co., Wrightsville Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn.

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.

Pulley Lathes.
Woods, T. B. Sons, Chambersburg, Pa.

Pump Buckets.
Fresnour, H. C., Chicago, Ill.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphryes Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
Red Jacket Mfg. Co., Davenport, Ia.
St. Joseph Pump & Mfg. Co., St. Joseph Mo.

Punches, Conductors.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Hilles, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Hilles & Jones Co., Wilmington, Del.
Mersick, C. S. & Co., New Haven Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Koos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works, Scranton, Pa.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Bowen Mfg. Co., Fond du Lac, Wis
Maine Mfg. Co., Nashua, N. H.
Michigan Barrel Co., Grand Rapids, Mich.

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Poilak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Jones Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark, N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grant Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jones & Laughlins, Ltd, Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper.
Thompson, Hugh R., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Phila. Roll & Mch. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, Ohio.
Seaman, Sleeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Shield.
Ironsides Co., Columbus, Ohio.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.
Woods, T. B. Sons, Chambersburg, Pa.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bumpers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Sample Holders.
Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.
Ward, Edgar T. & Sons, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Lansingburgh, N. Y.
Grand Rapids Sash Pulley Co., Grand Rapids, Mich.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
American Cutlery Co., Chicago, Ill.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Peloubet Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 53 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
N. J. Iron & Metal Co., Paterson, N. J.
Osborne, D. M. & Co., Auburn, N. Y.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O.
Syracuse Chilled Plow Co., Syracuse, N.Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.
Sawyer Tool Co., Fitchburg, Mass.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screw Plates.
Fairbanks Co., 311 Broadway, N. Y.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Haskell, Wm. H. Mfg. Co. Pawtucket.
Miles, F. S., 295 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co. Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures
Standard Stamping & Die Co., Brooklyn, N. Y.

Shaft Couplings.
Fairbanks Co., 311 Broadway, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Cumberland Iron & Steel Shafting Co., Cumberland Md.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phoenix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
Whitney, A. R. & Co. 71 Broadway, N.Y.

Shaping Machines.
Cincinnati Planer Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet Metal Machinery.
Adriance Mach. Works, Brooklyn, N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Strand, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co. St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Stoves.
Darby, Edw. & Sons Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Slaw Cutters.
Disston, Henry & Sons Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City N. J.

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Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N.Y

Specialty Manufacturers.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St, N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace Bros., Wallingford, Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.

Sprayers.
Eureka Co., Rock Falls, Ill.

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Dunbar Bros., Bristol, Conn.
Lord Bros Mfg Co, Tilton N. H
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Smith Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Wasburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Racine Economy Spring Co. Racine, Wis.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Chicago Spring Butt Co., Chicago, Ill.
Van Wagoner & Williams Hdw. Co, Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N Y
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids Mich
Hathaway Mfg. Co., Bridgeport, Conn.
Houghton & Buxton Mfg. Co., Worcester Mass.
Jenkinson, R. C. & Co., Newark N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Lunkenheimer Co, Cincinnati, Ohio.
Mason Regulator Co, Boston, Mass.

Steam Traps.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Hoops
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Cumberland Iron & Steel Shafting Co., Cumberland, Md.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons., Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 71 Broadway, N.Y.
Wilmot & Hobbs Mfg. Co., Bridgeport.
Manufacturers' Agents
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-583 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St. N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke,
Milbradt, G. A. & Co. St. Louis, Mo.
Morley Bros., Saginaw Mich.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport Conn
Pesly, C. H. & Co., Chicago, Ill.
Cam, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Fairbanks Co 311 Broadway, N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Weis Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Stokers.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Fayette, Ind

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stoves, Oil, Vapor & Gasoline.
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm. Mfg. Co., Hartford, Conn.
Wallace Bros., Wallingford, Conn.

Tack Claws.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee Wis.
Ripley & Bartlett, Plymouth, Mass.
Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

Tap Holder
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Prodgman Bros., Meriden Conn.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Terne Plate.
American Tin Plate Co., Chicago, Ill.

Thurometers.
Bayer & Co., Phila., Pa.

Time Recorders.
Heywood Bros. & Wakefield, Gardiner, Mass.

Tin Mills
Philadelphia Roll & Mch. Co., Phila., Pa.
Phillips, F. & Sons, Phila., Pa.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo,

Tin Plate.
American Tin Plate Co., Chicago, Ill.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore

Tire Repair Outfits.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.,
Bliss, R. Mfg. Co., Pawtucket, R. I.

Tool Racks.
Hager, John N., Port Atkinson, Wis.

Tools.
Athol Machine Co., Athol, Mass.
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Butts & Ordway Co., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg. Co., Greenfield Mass

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Randolph & Clowes, Waterbury, Conn.

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Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phœnix Tube Co., Brooklyn N. Y.

Tubing, Steel.
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National Tube Wks. Co., McKeesport, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
Wilmot & Hobbs Mfg. Co., Bridgeport.

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Henderson Bros., Waterbury, Conn.

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Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

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Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.

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Kennedy Valve Mfg. Co., 75 John St. N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
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American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton St., N. Y.

Ventilators.
Enterprise Foundry Co., Cincinnati, O.

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Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Lewis Tool Co., 44 Barclay St., N. Y.
Massey Vise Co. Chicago, Ill.
Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

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Anderson Pole & Shaft Co., Anderson, Ind.
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Covert's Saddlery Works, Farmer, N. Y.
Kane Bros. Co., Poughkeepsie N. Y.
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Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
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Wilson & Smith, Worcester, Mass.

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Cyclone Washing Mch. Co., Battle Creek, Mich.
Michigan Washing Mch. Co., Muskegon, Mich.
Wayne, Anthony Mfg. Co., Ft. Wayne Ind.

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Poole, Robt. & Son Co., Baltimore, Md.

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Carroll Muzzle Co., Carroll, Iowa.

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Flint & Walling Co., Kendallville, Ind.

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Samson Cordage Works, Boston, Mass.

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Stanley Works, New Britain, Conn.

Window Stops.
Taplin Mfg. Co., Forestville, Ct.

Window Weights.
Barney & Reed Mfg. Co., Boston, Mass.

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Kidd Bros. & Burgher Steel Wire Co., McKees Rock, Pa.
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New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Pittsburgh Wire Co., Pittsburgh, Pa.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton, N. J.
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Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
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W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

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Chandler & Farquhar, Boston, Mass.
King, J. M. & Co., Watertown, N. Y.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

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Mossberg & Granville Mfg. Co., Providence, R. I.

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Heeder Wire Brush Co., Milwaukee, Wis.
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New York Wire Cloth Co., 102 Chambers St., N. Y.
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Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

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American Wire Goods Co., Lowell, Mass.
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Bates Machine Co., Joliet, Ill.
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Nilson, A. H. Mch. Co., Bridgeport, Conn.
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Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

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Milwaukee Tack Co., Milwaukee, Wis.
Pittsburgh Wire Co., Pittsburgh, Pa.
Taunton Wire Nail Co., Taunton, Mass.
Townsend, C. C. & E. P., New Brighton

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Bates Machine Co., Joliet, Ill.
Miller, H. J., Bridgewater, Mass.
National Machinery Co., Tiffin, Ohio.

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American Steel & Wire Co., Chicago, Ill.
Pittsburgh Wire Co., Pittsburgh, Pa.
Washburn & Moen Mfg. Co., Worcester.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

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Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
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Wood Screw Machinery.
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Seneca Falls Mfg. Co., Seneca Falls, N. Y.

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Bonney Vise & Tool Co., Phila., Pa.
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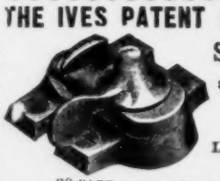

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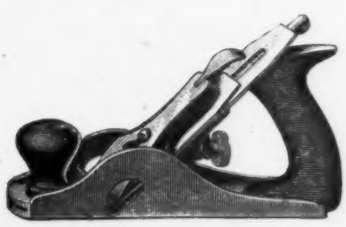

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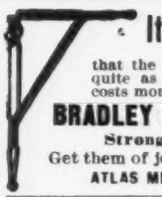

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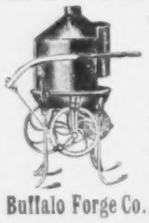
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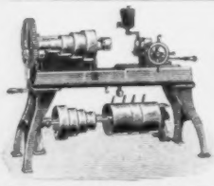
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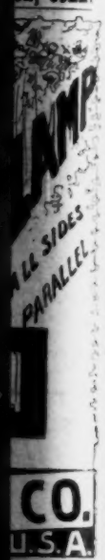

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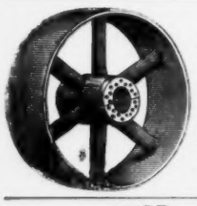

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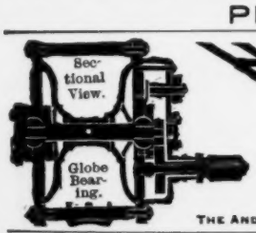

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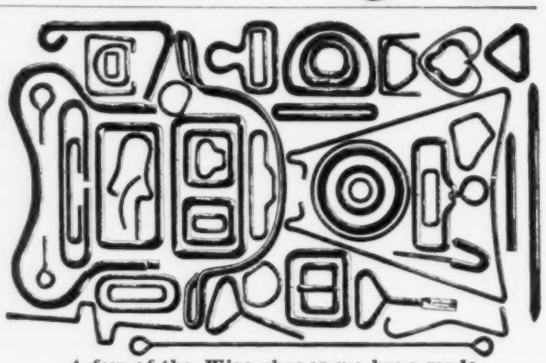

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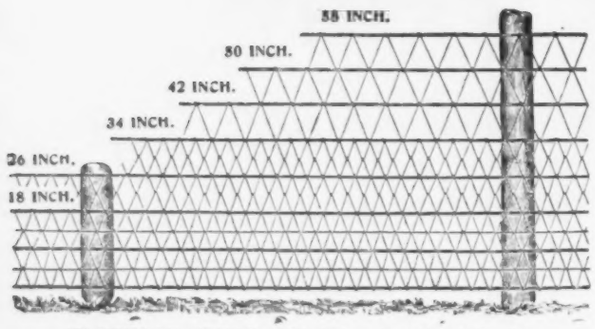

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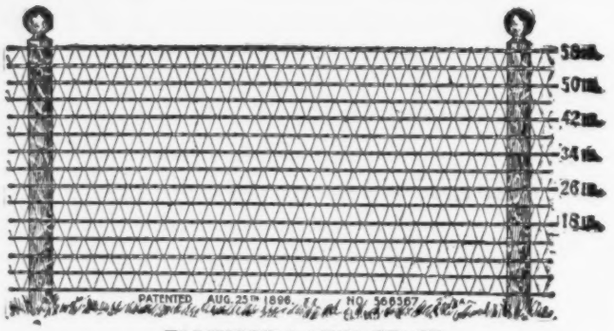

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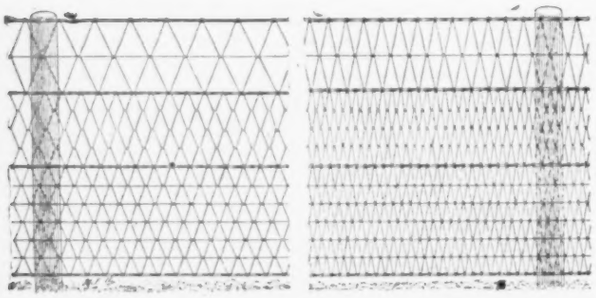

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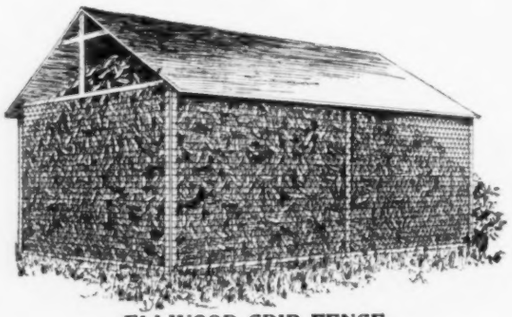

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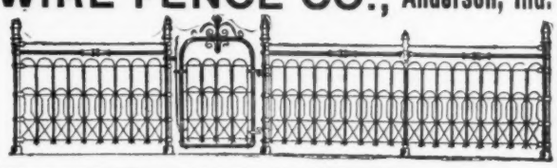

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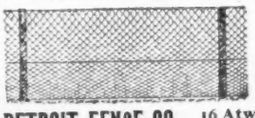

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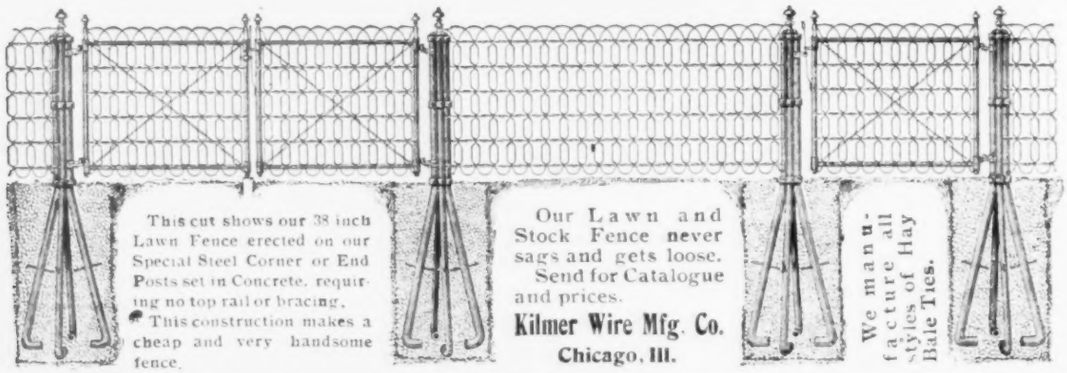

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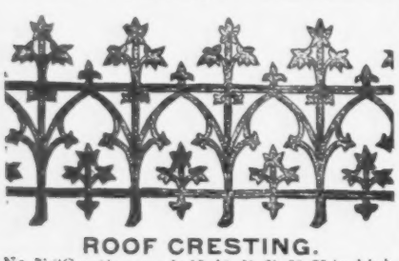

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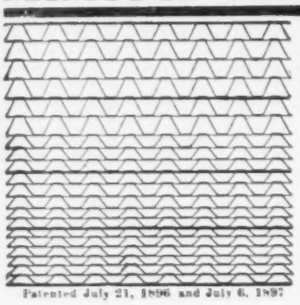

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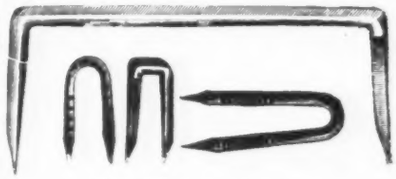

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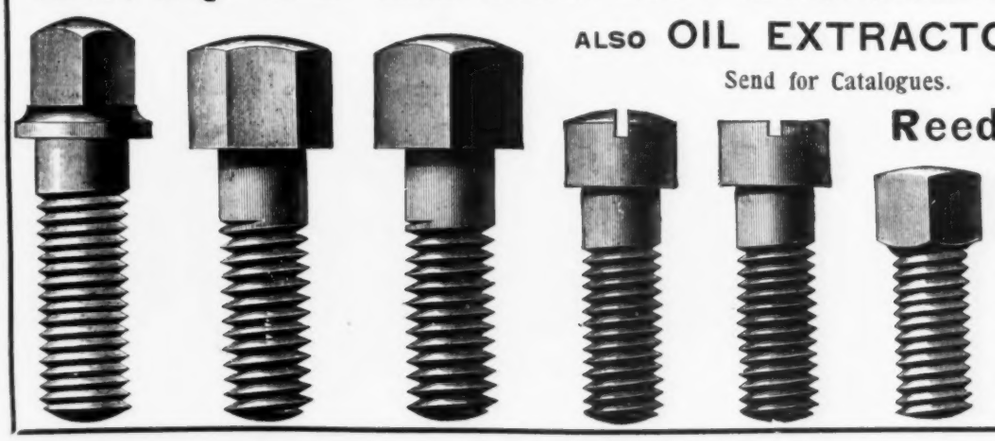

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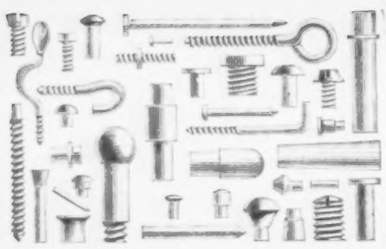

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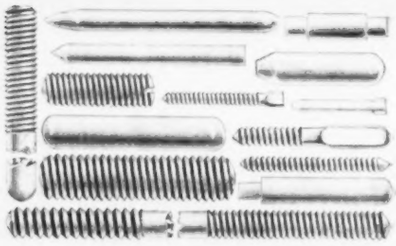

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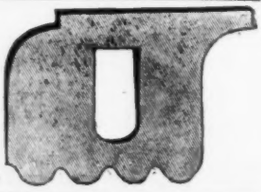

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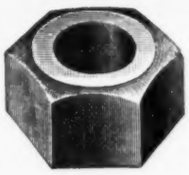

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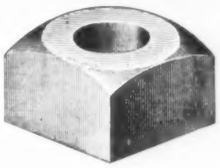

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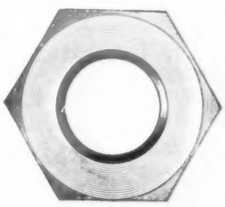

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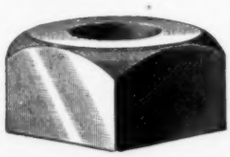

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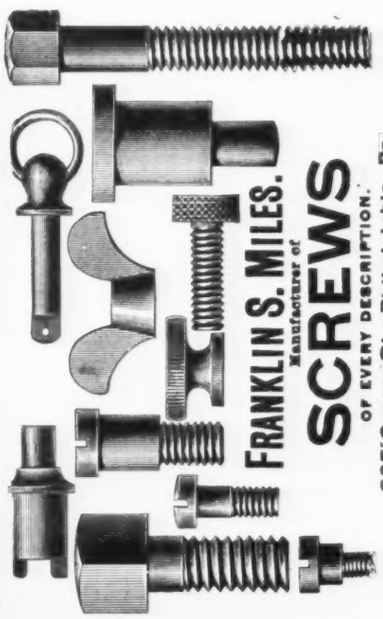

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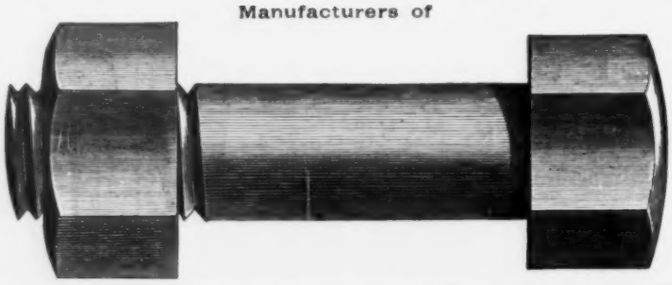

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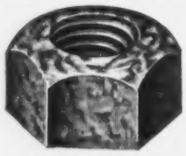

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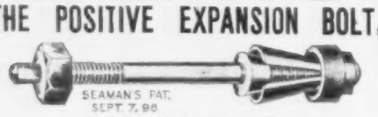

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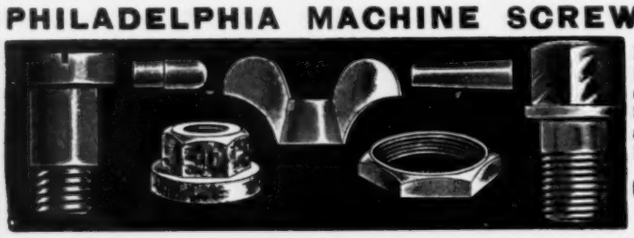

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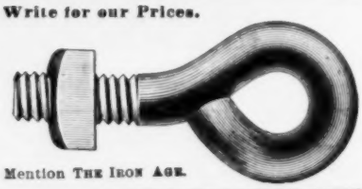

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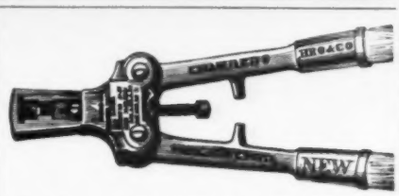

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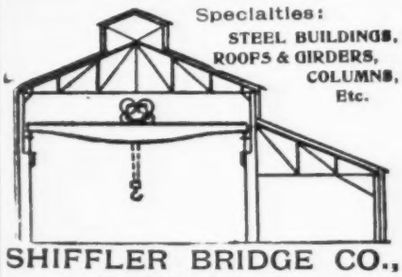

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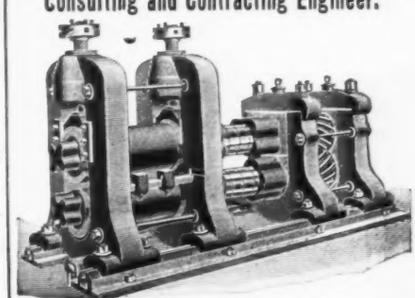

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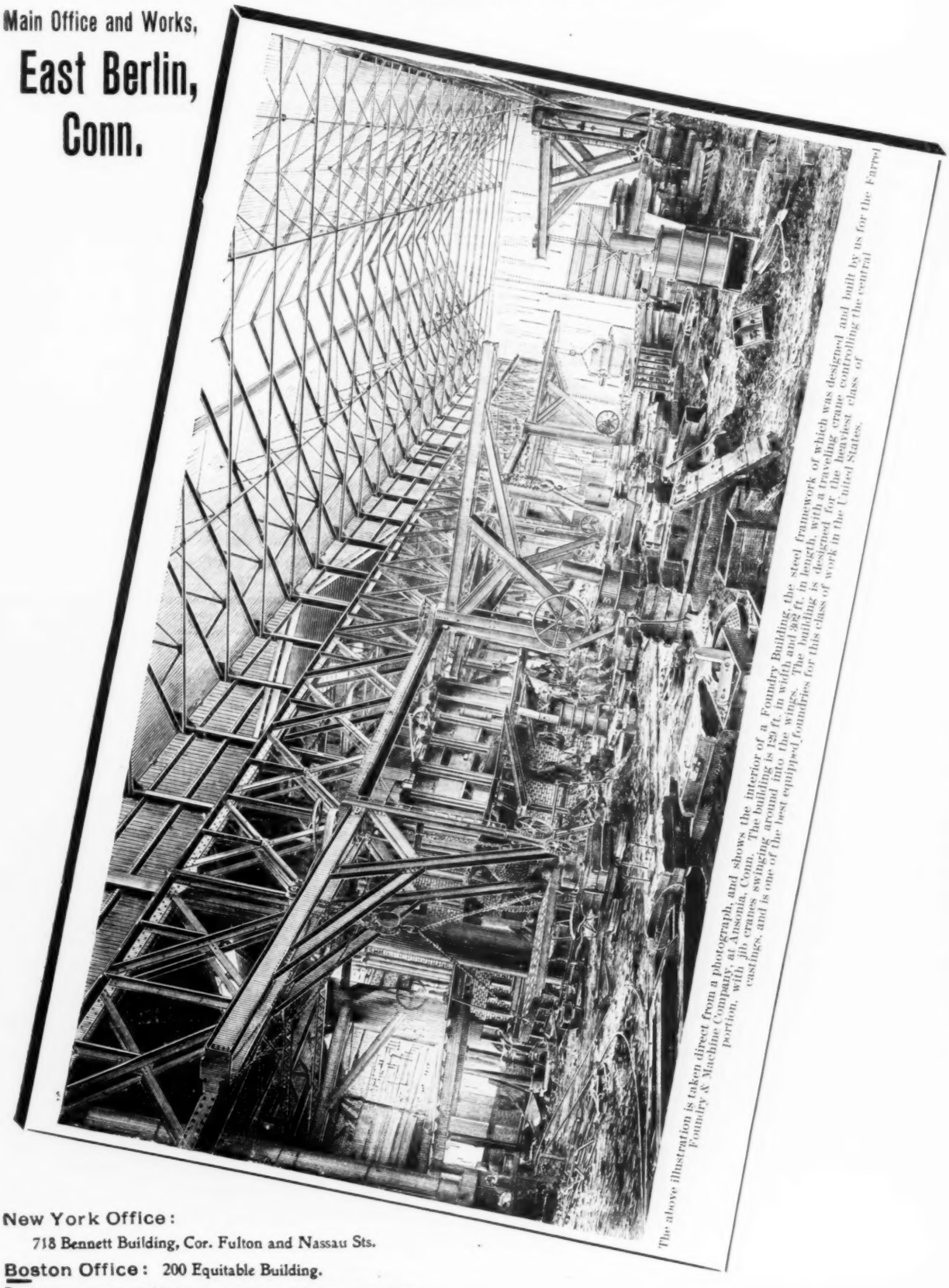

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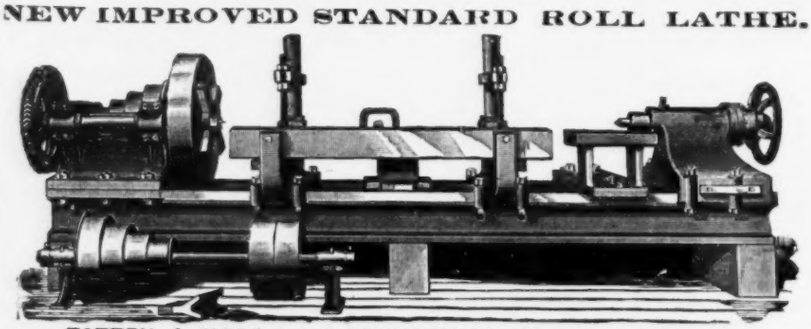

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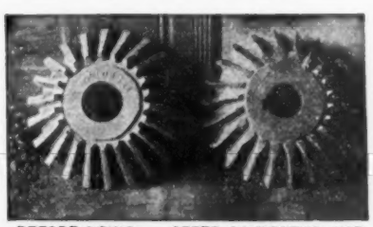

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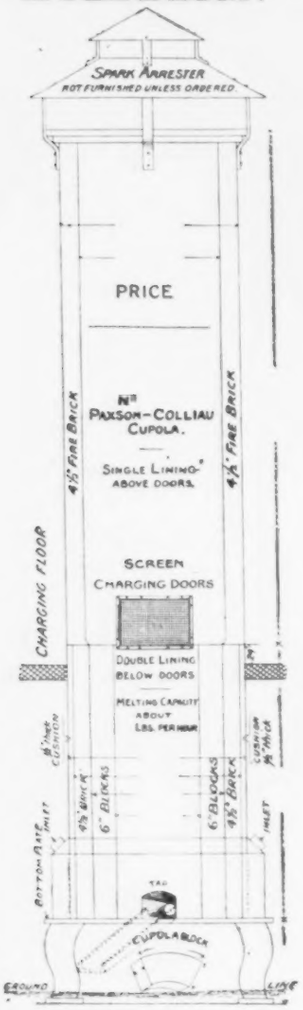

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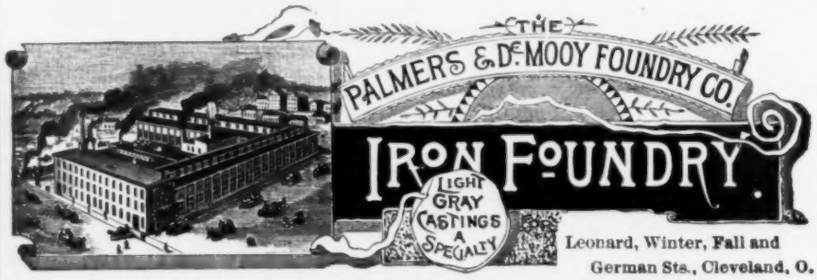

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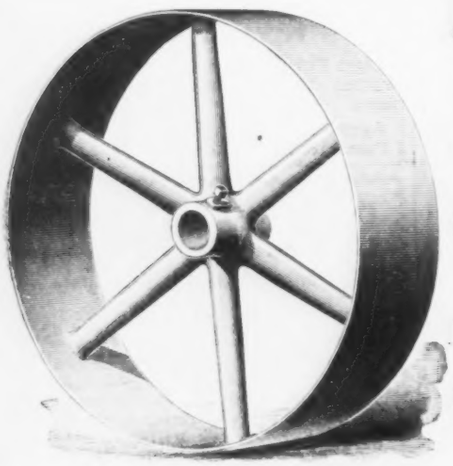

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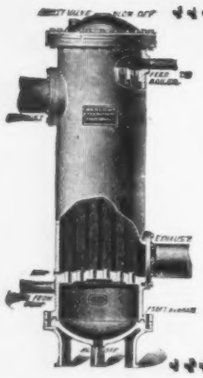

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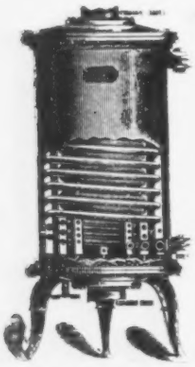

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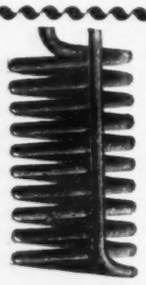

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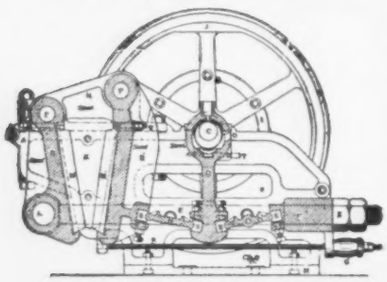

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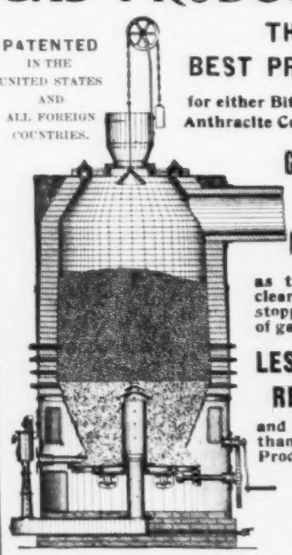

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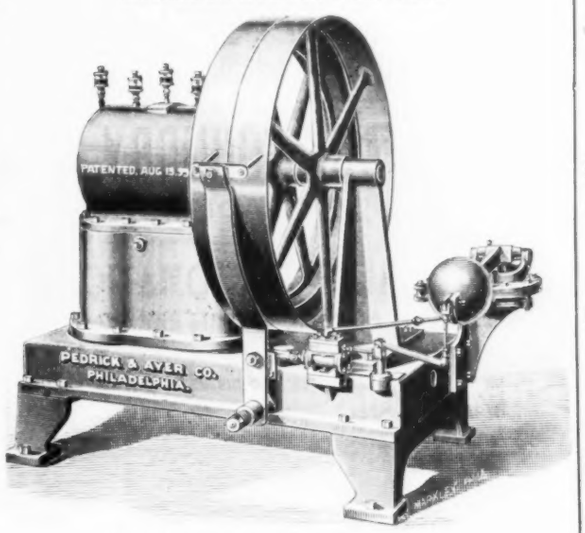

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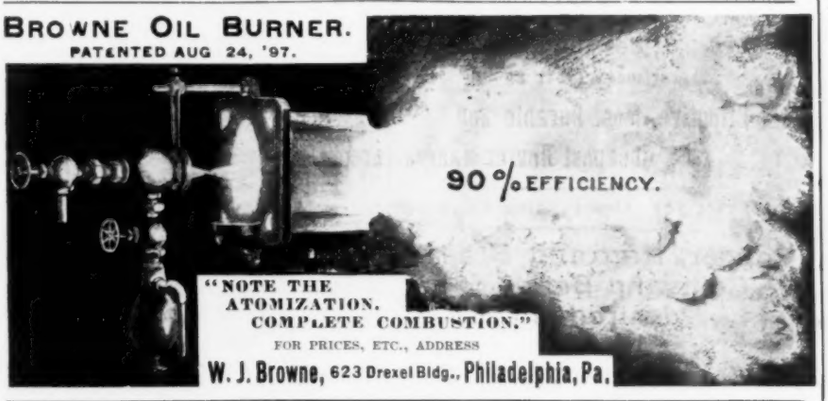

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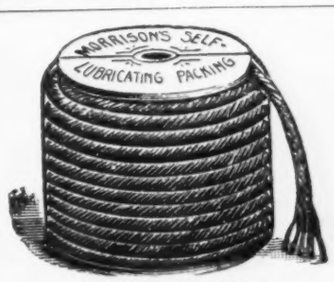

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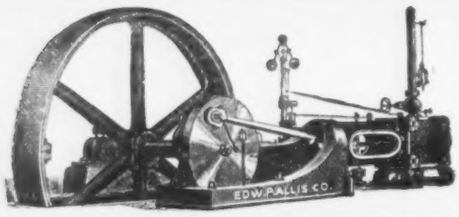

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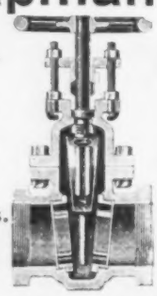

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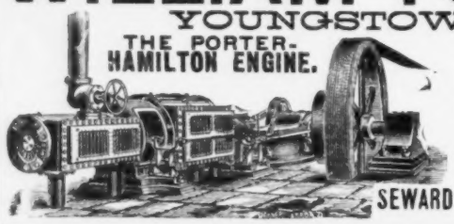

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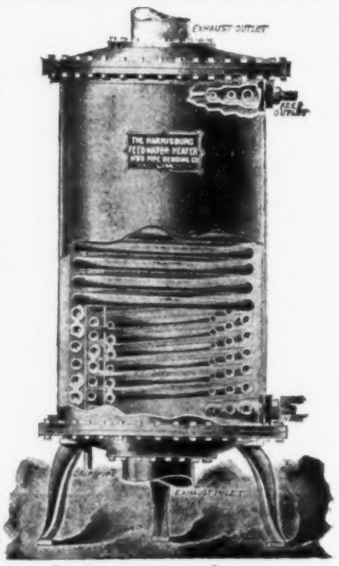

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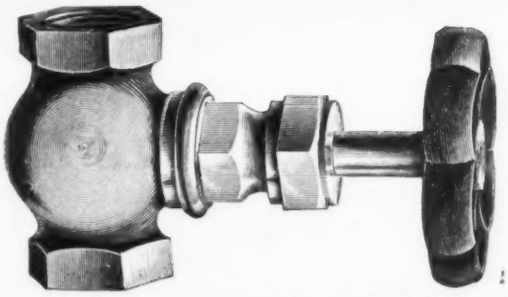

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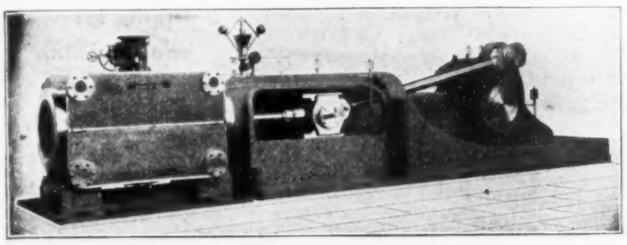

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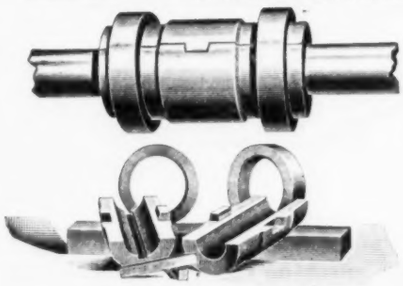

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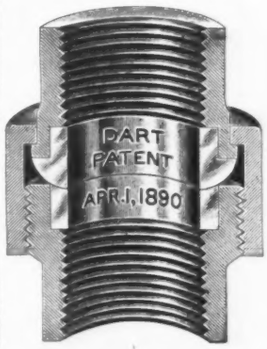

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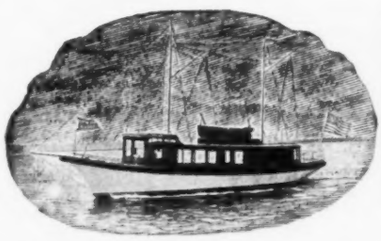

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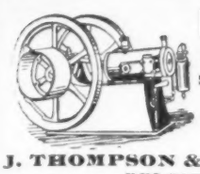

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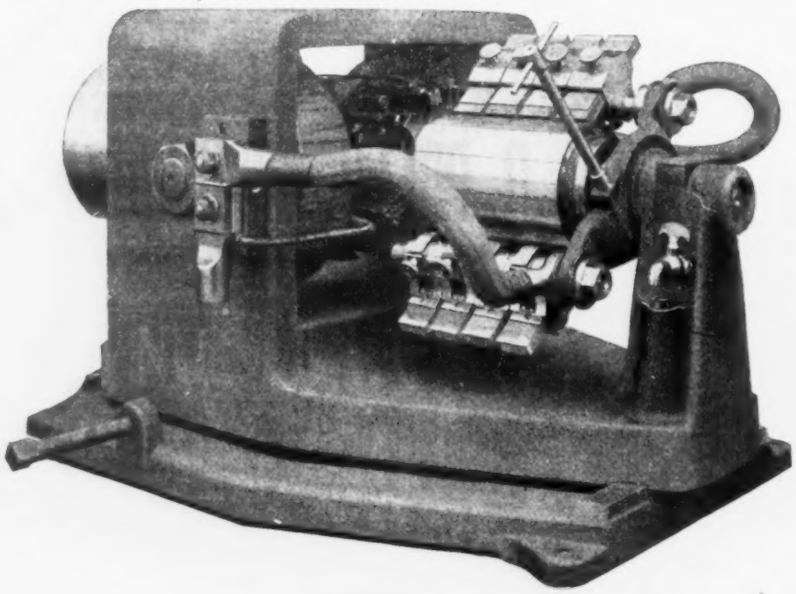

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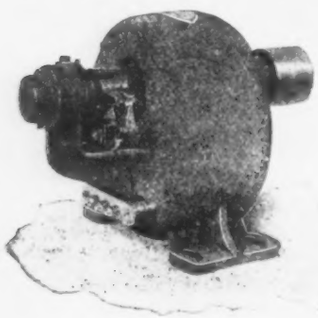

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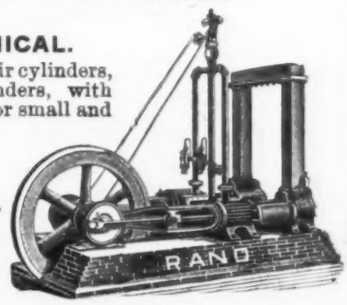

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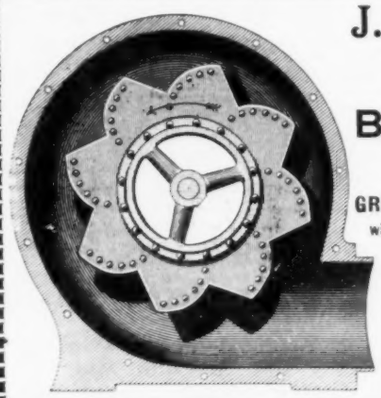

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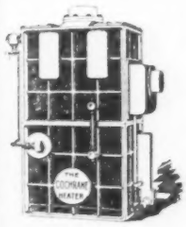

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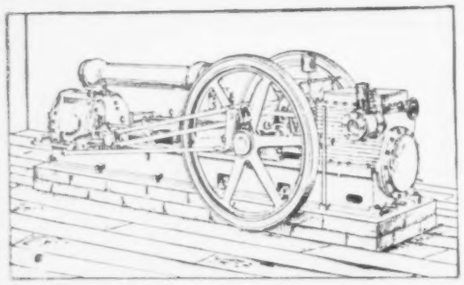

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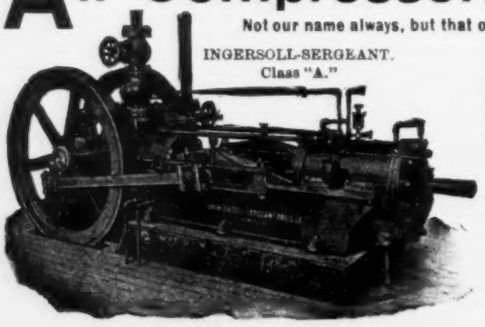
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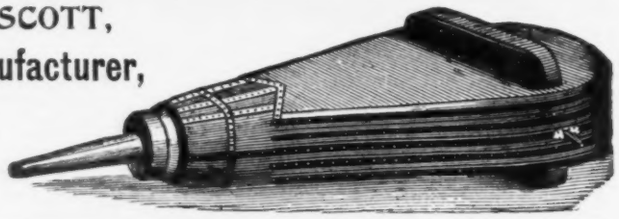

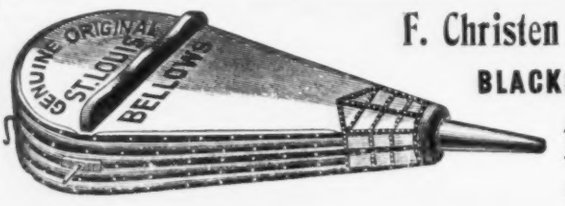

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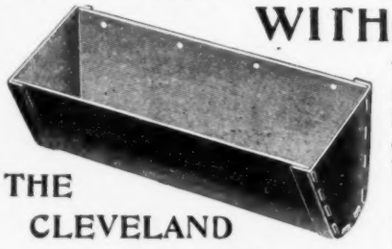

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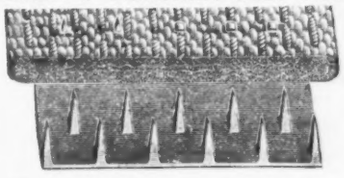

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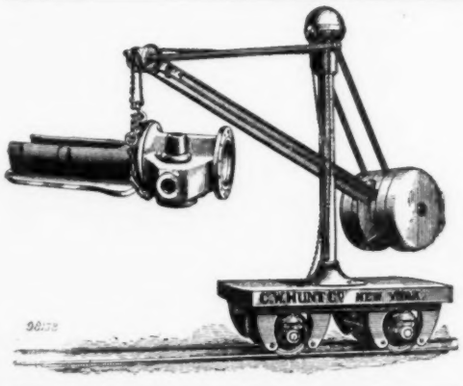

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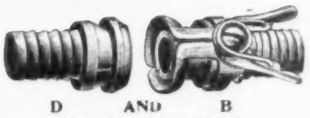

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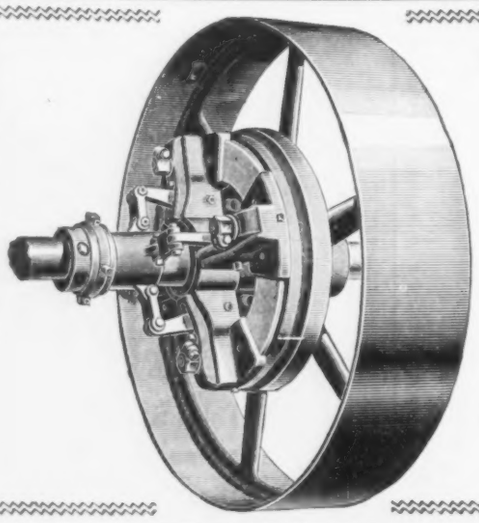

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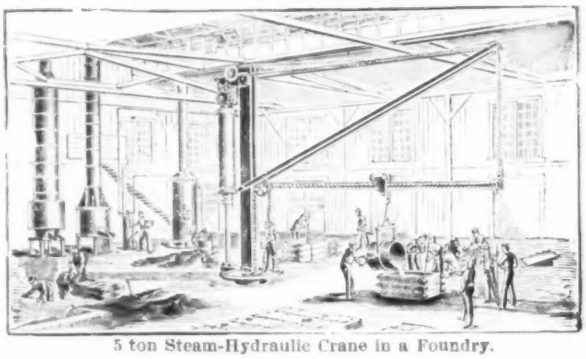

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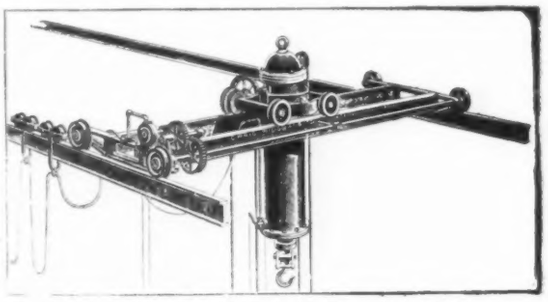

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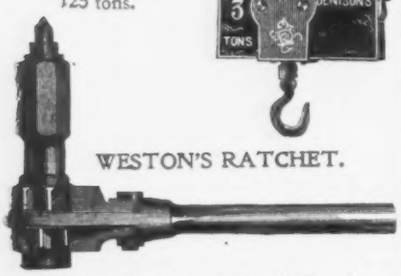

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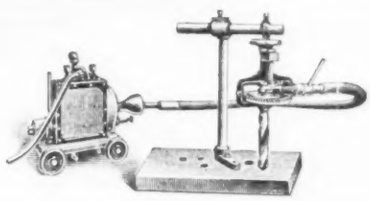

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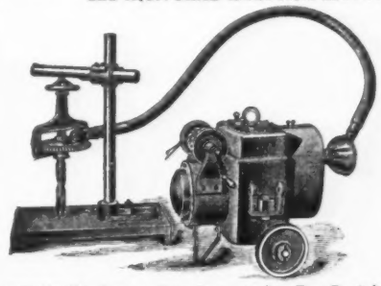

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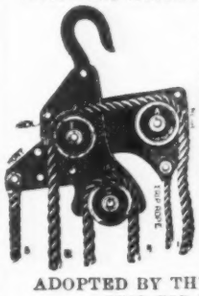

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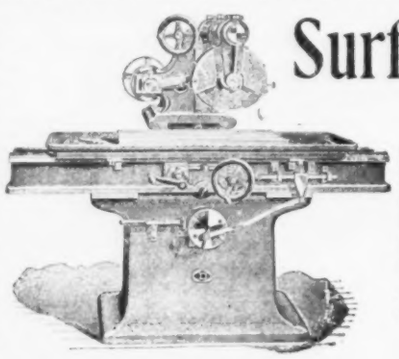

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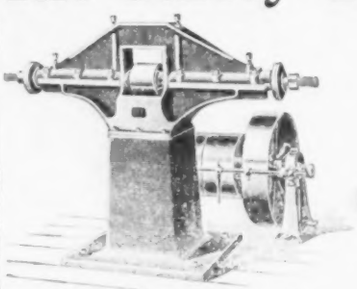

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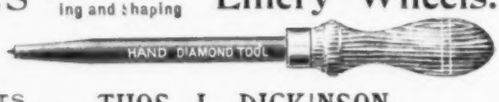

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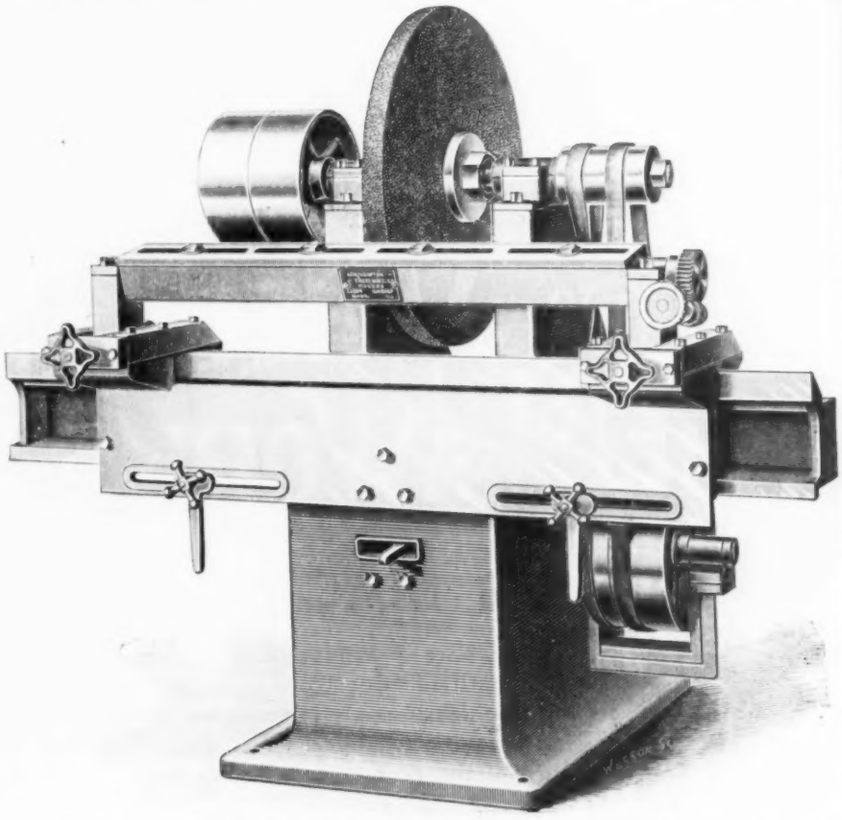

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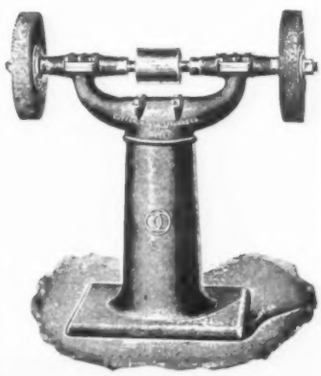

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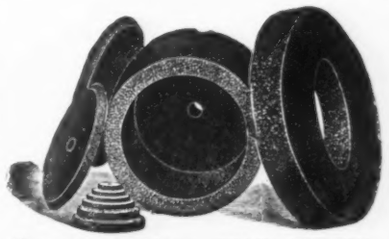

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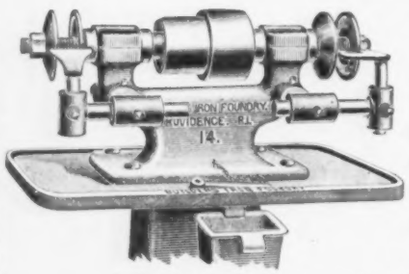

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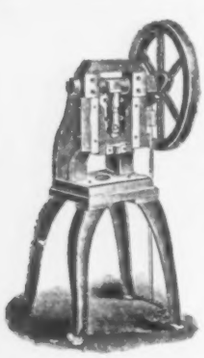

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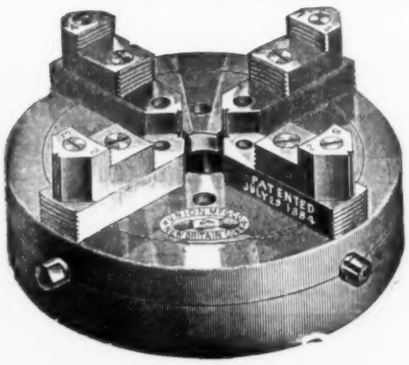

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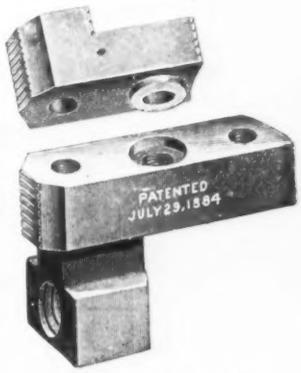

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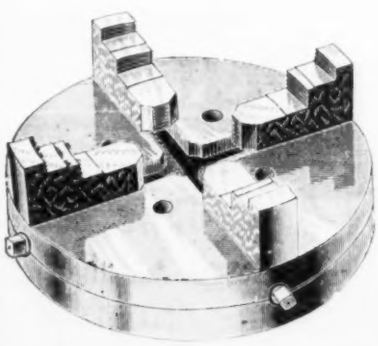

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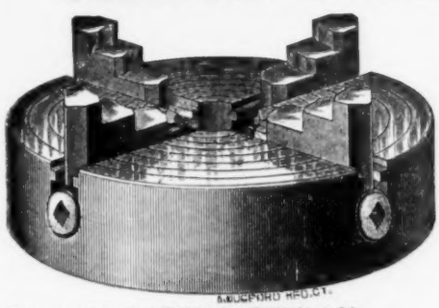

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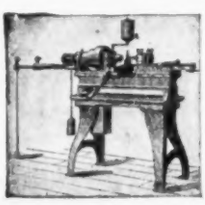

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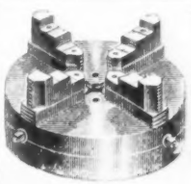

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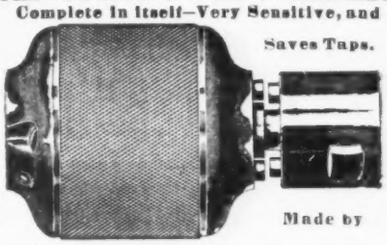

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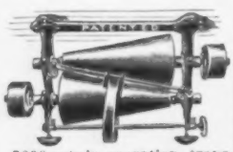

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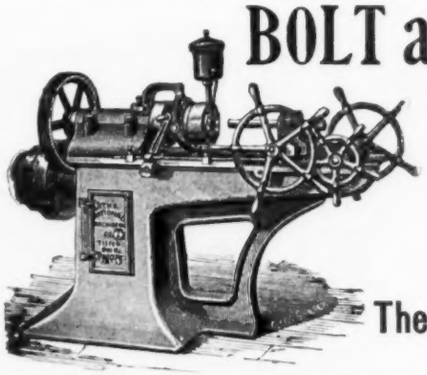

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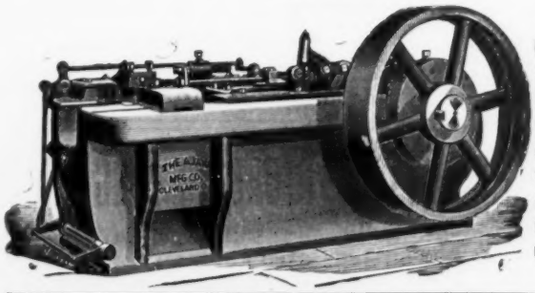

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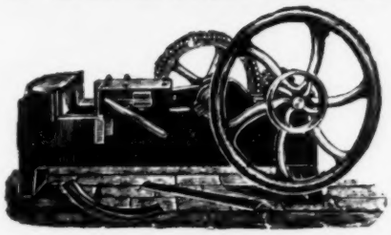

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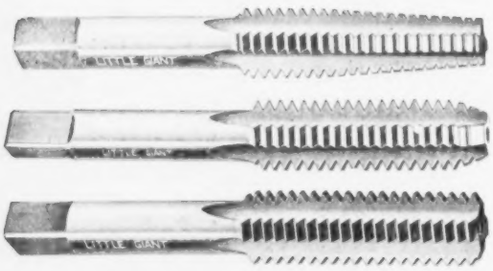

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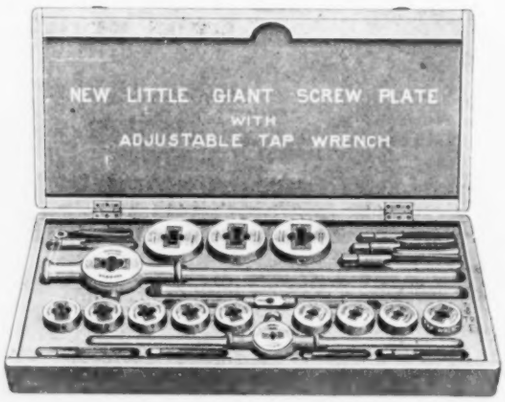

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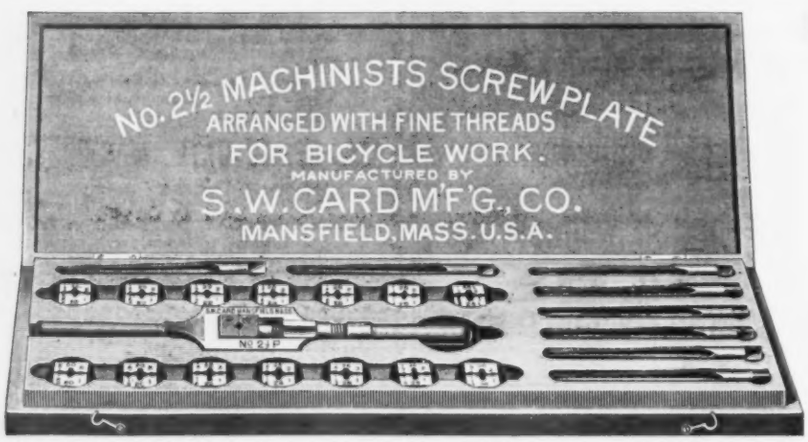

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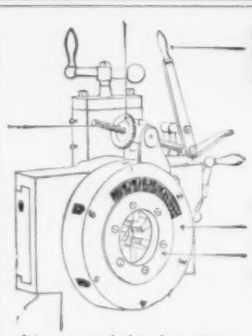

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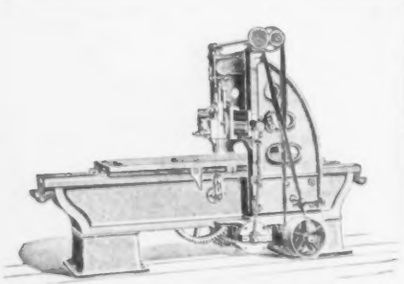

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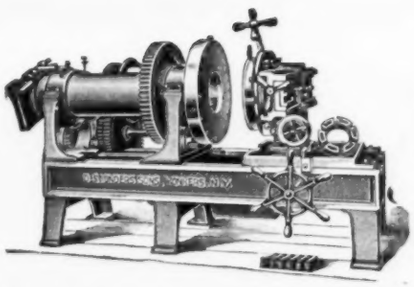

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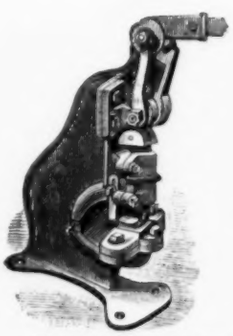

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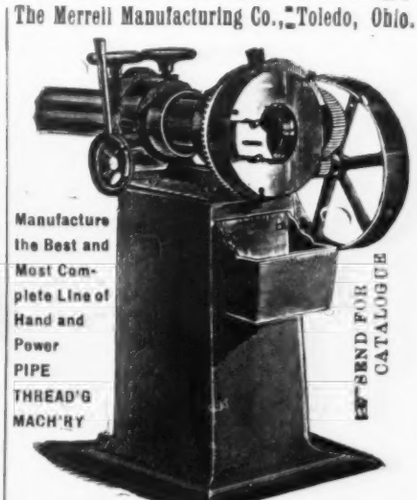

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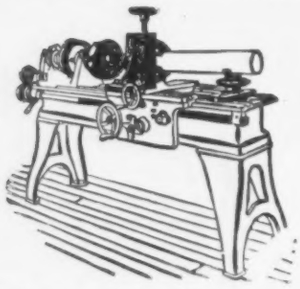

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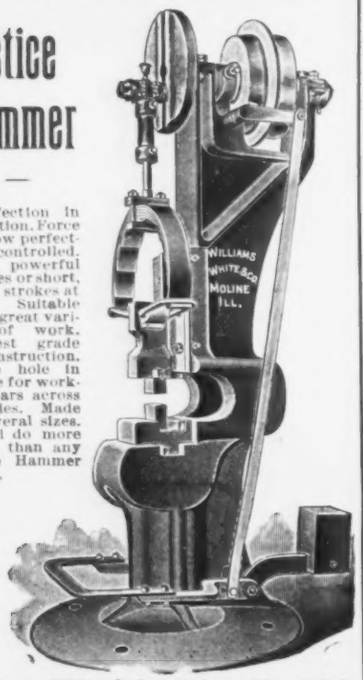

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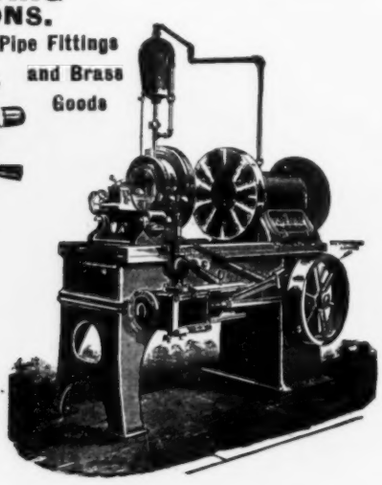

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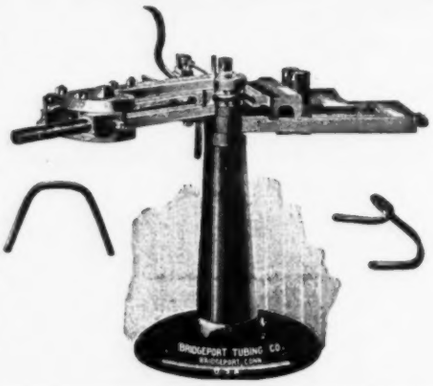

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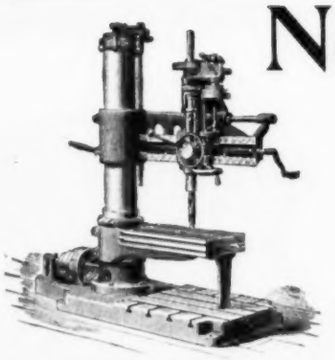

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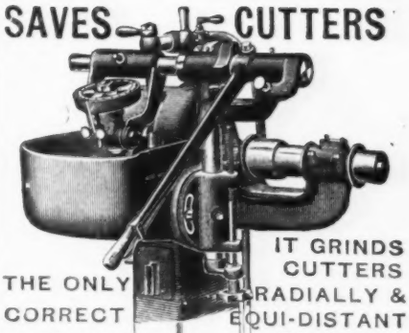

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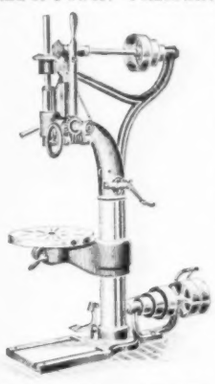

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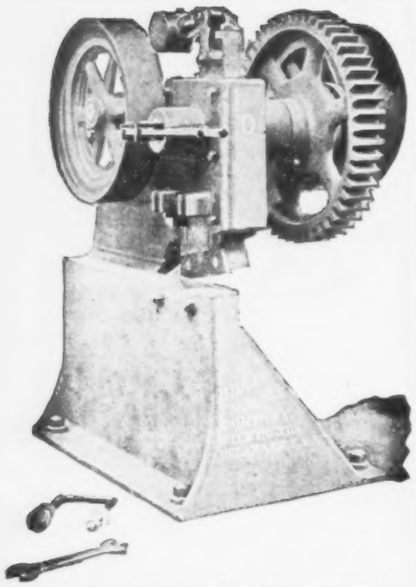

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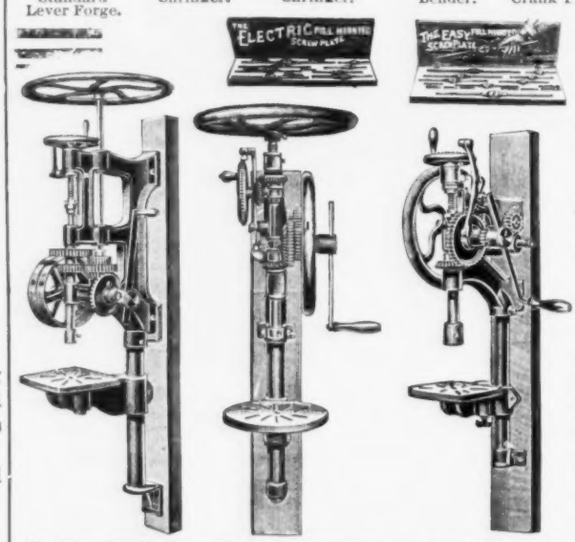

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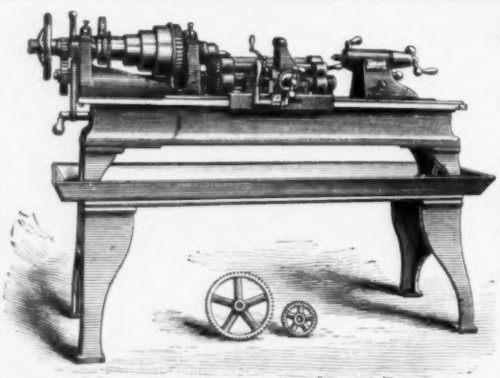

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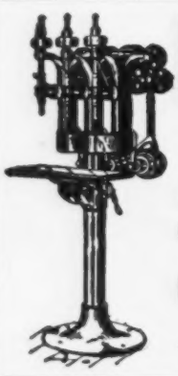

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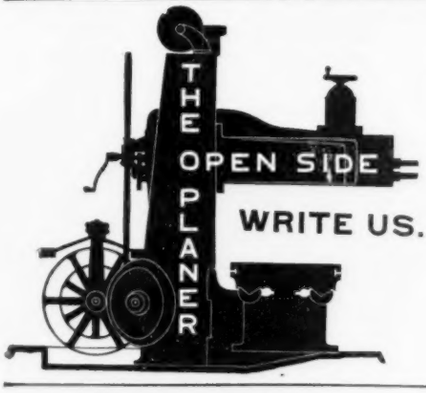

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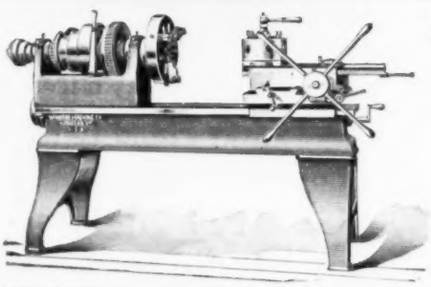

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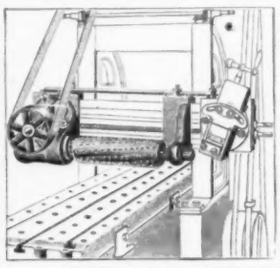

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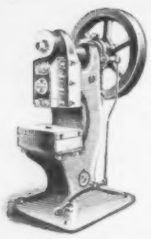

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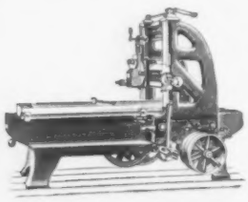

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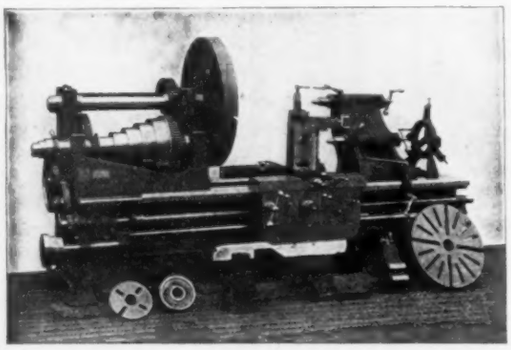

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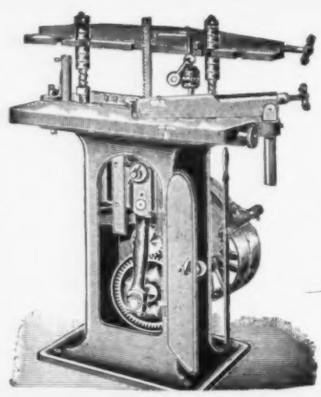

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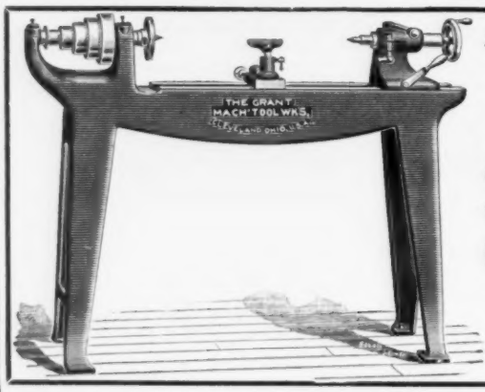

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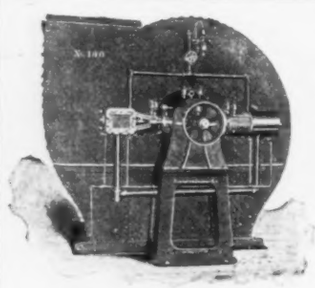

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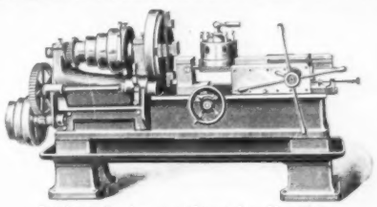

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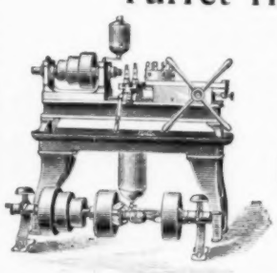

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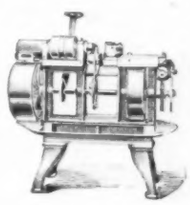

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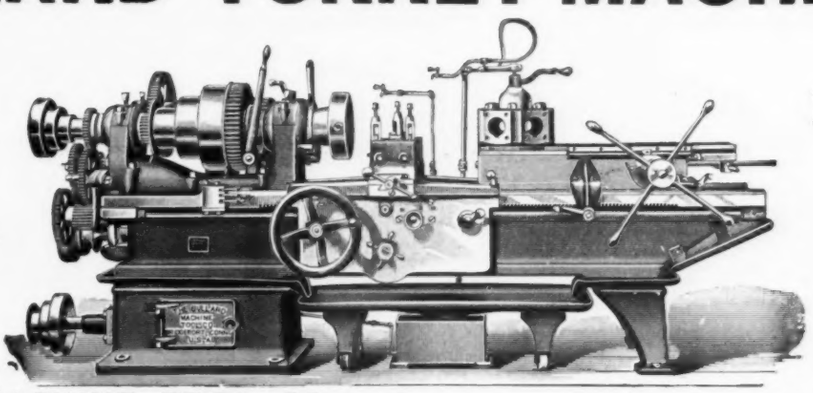

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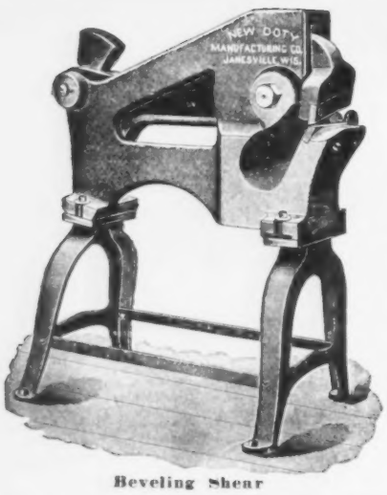

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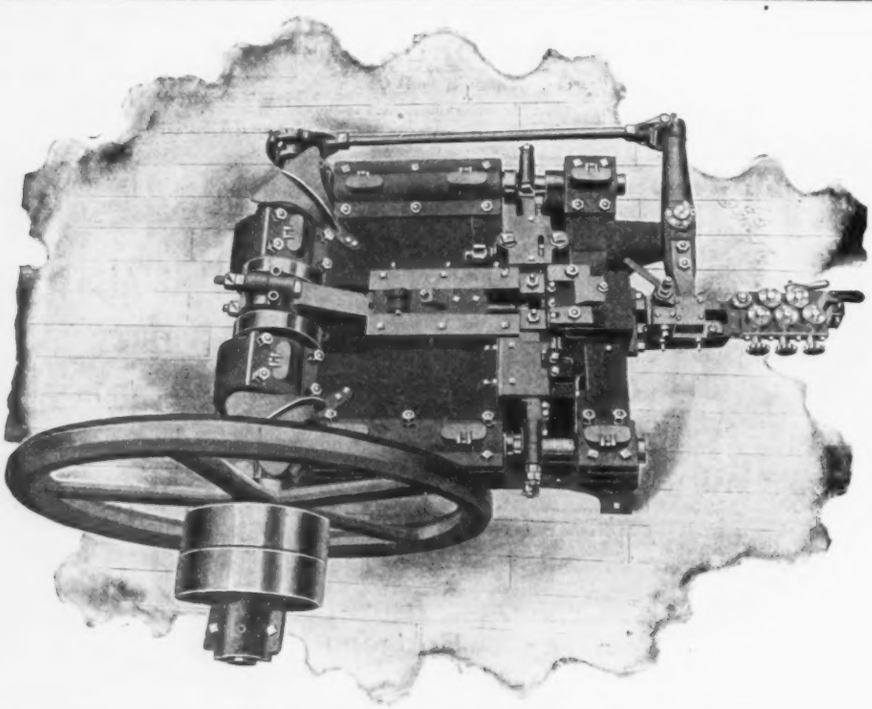

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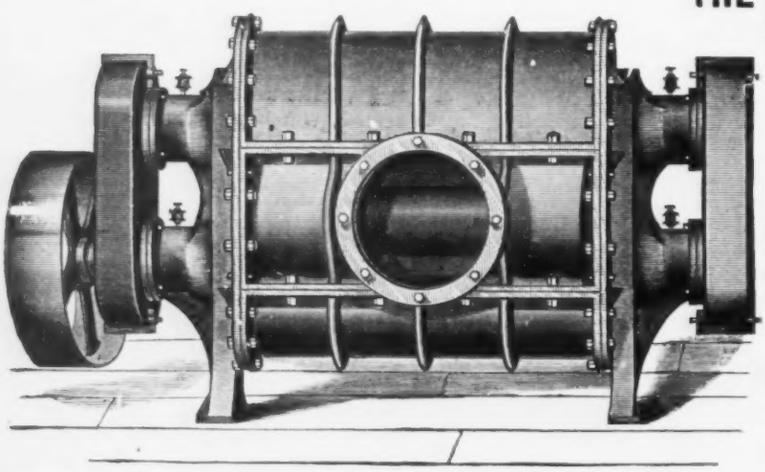

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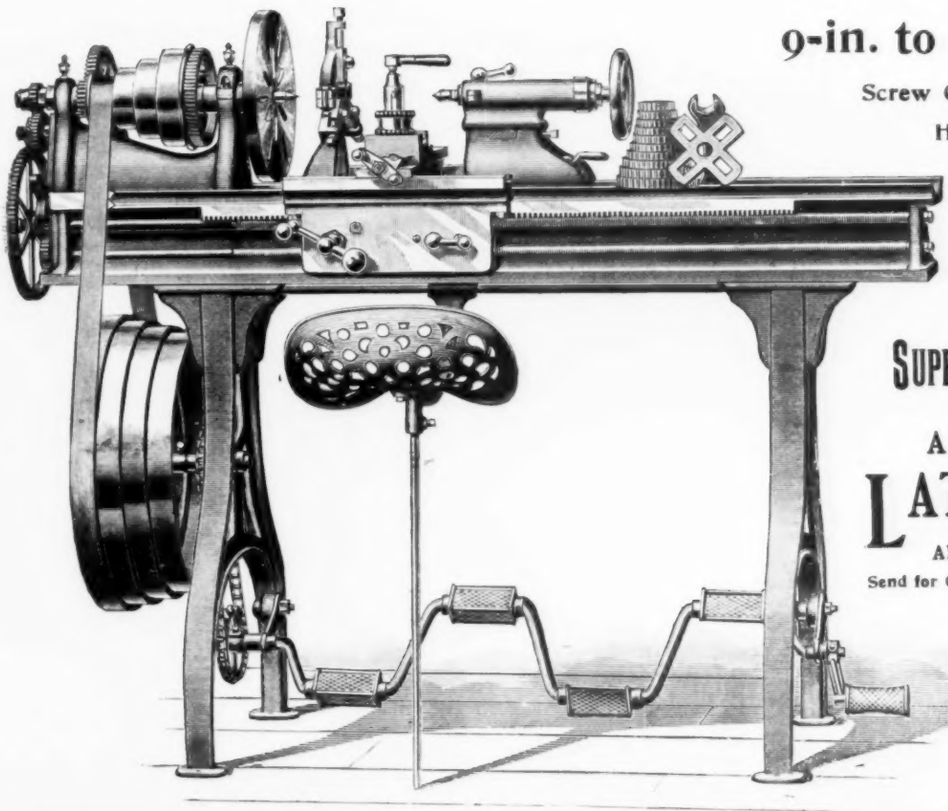

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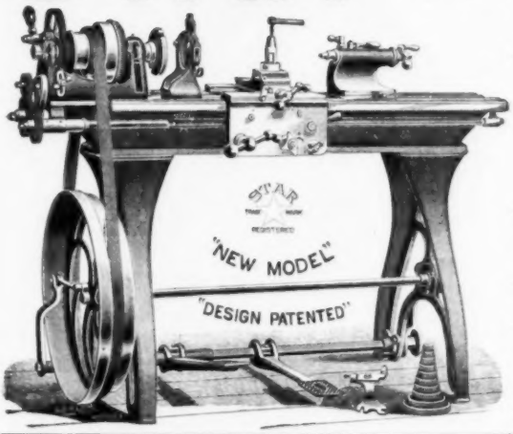

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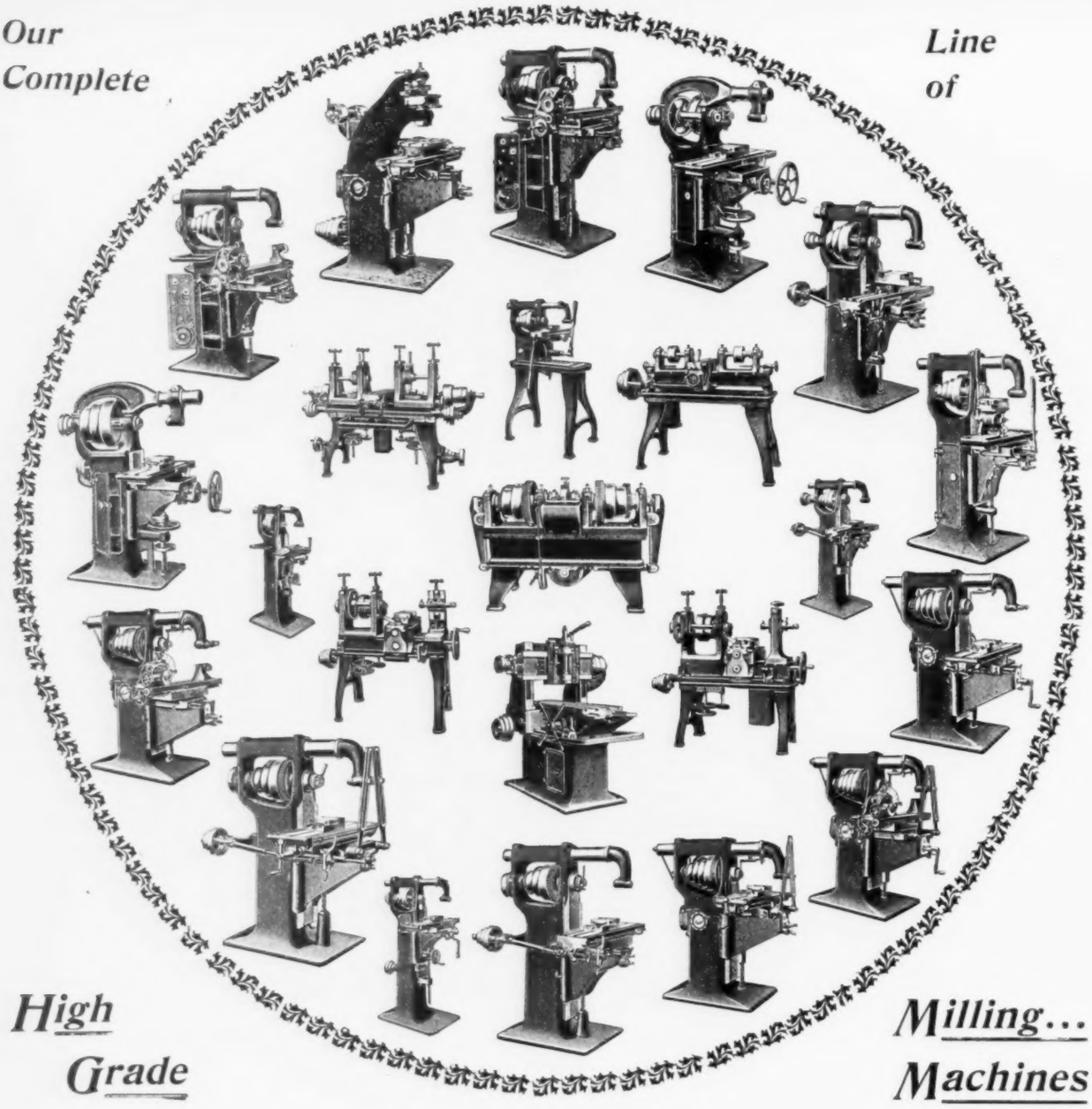

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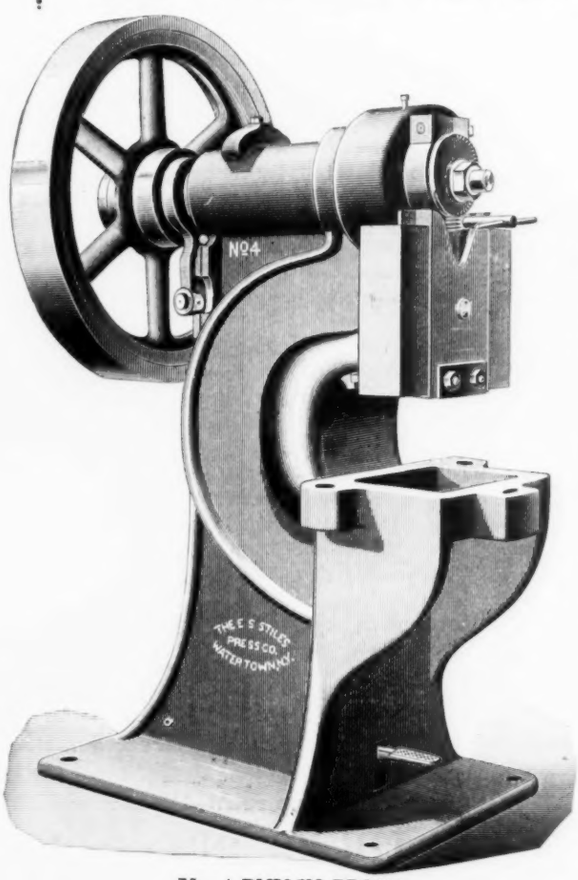

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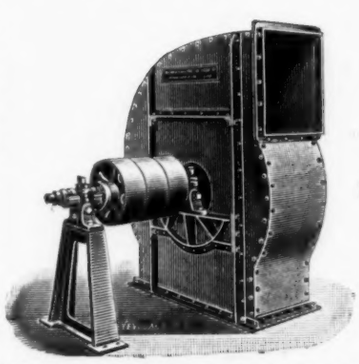

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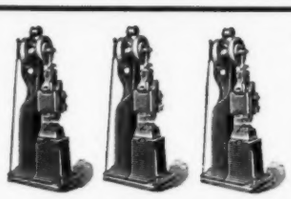

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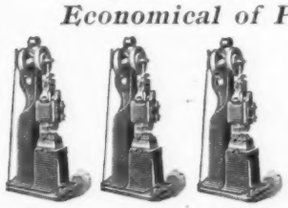

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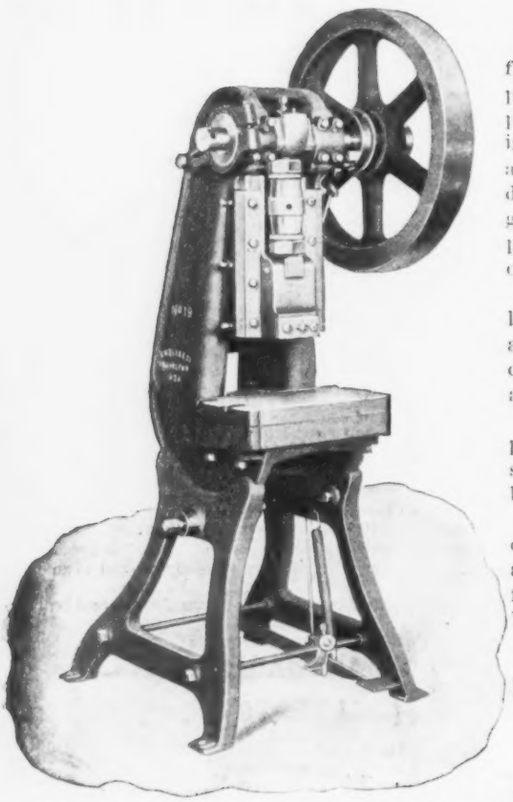

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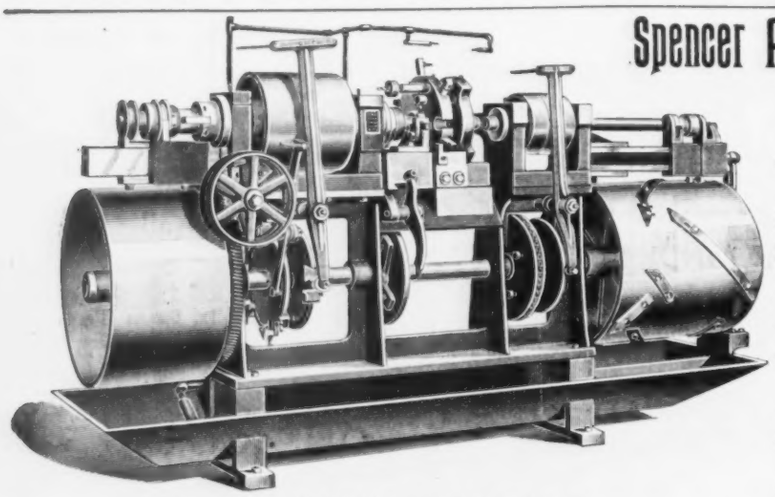

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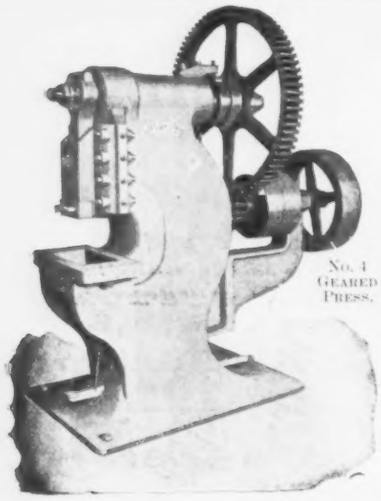

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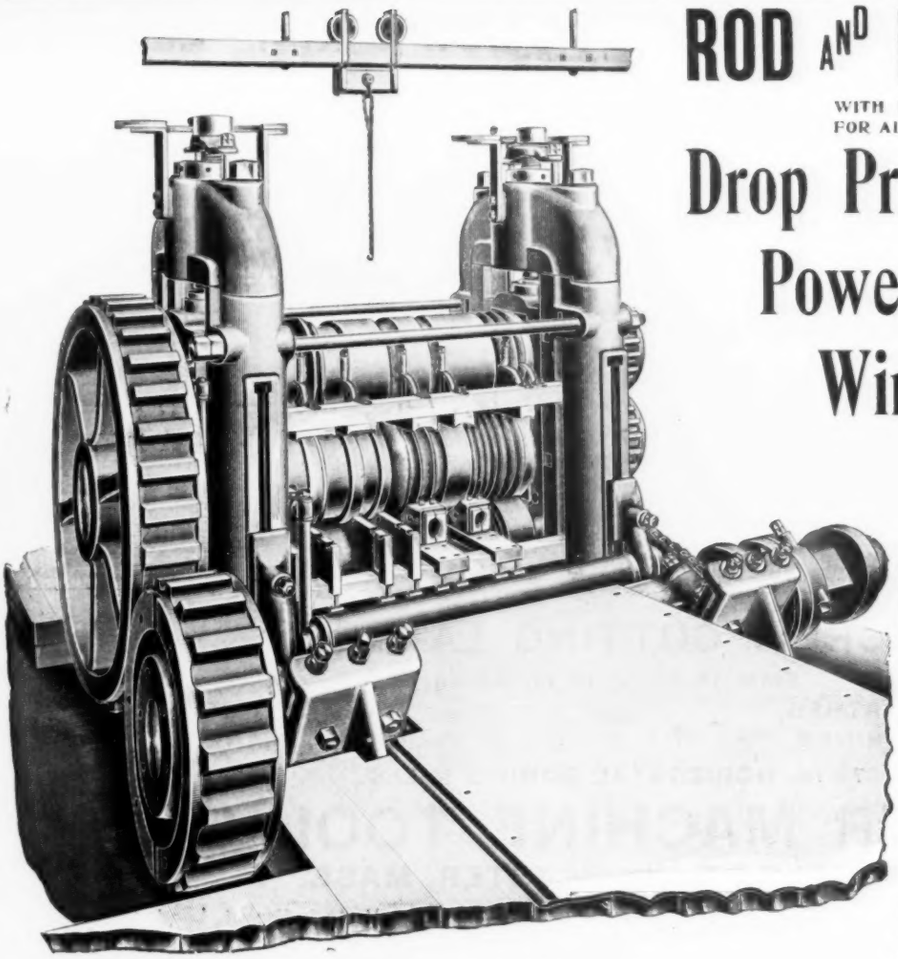

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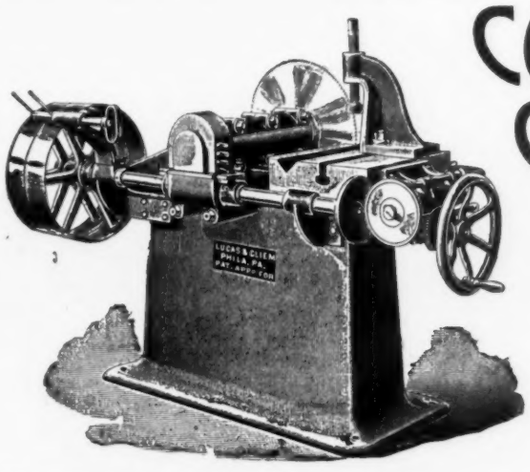

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ALL KINDS **PRESSES, DIES AND TOOLS**
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EXTENSION, FACING AND ENGINE **LATHES.**

27-in. Swing x 12 ft. Bed Screw Cutting Lathe.

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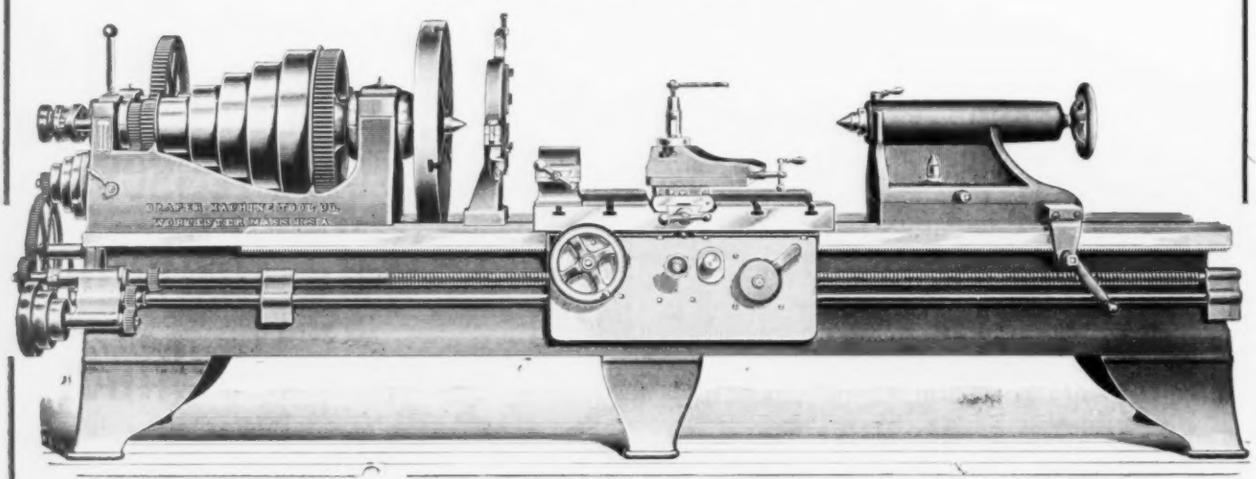

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From 14 in. to 42 in. Swing.

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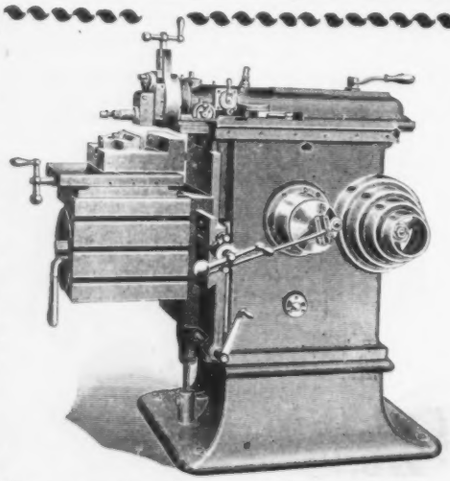

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15 and 24 inch stroke. Patented features.
Graduated swivel table swiveling in either direction through an arc of 90 degrees.
Power elevating for raising and lowering table,—24 inch machine.
Worm and gear adjustment to swivel table,—24 inch machine.
Power down feed to tool slide on any angle.
Automatic stop to tool slide.
Stroke positioned while machine is in motion.
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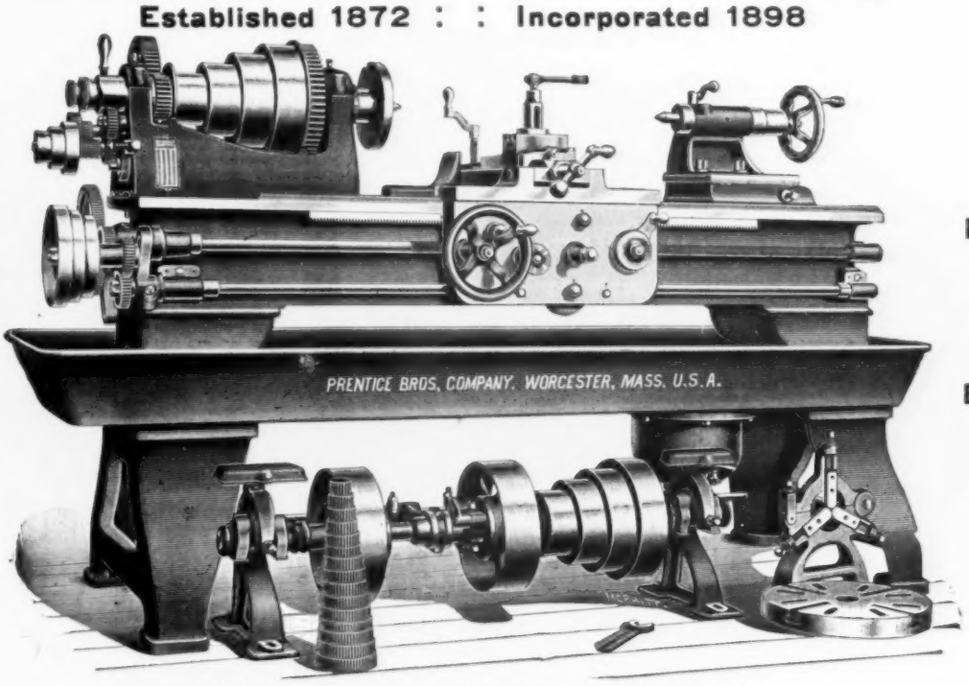

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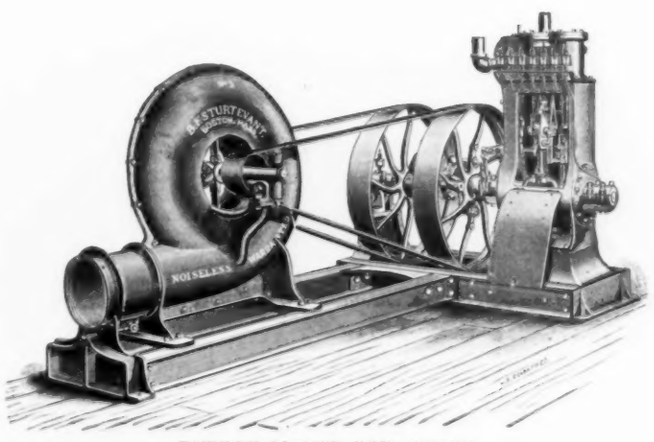

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No. 1½ Double Action, Open Back.
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High Grade Automatic Machinery to Order.

Rivet Machines,
Screw Thread Rolling Machines,
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Intricate Special Machinery a specialty.

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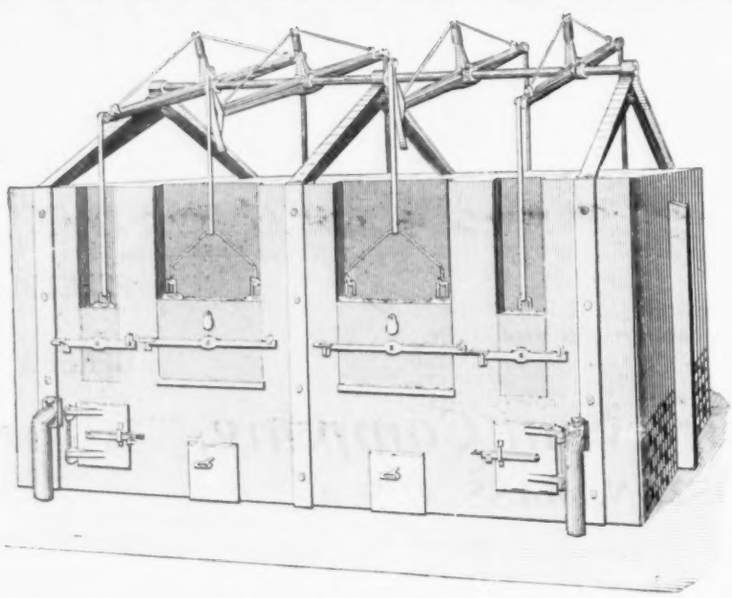

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Cost of Repairs Practically Nothing.

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Machine Works Selling Out.

Several complete outfits have lately come into our hands. The tools are modern, in good condition and will be sold low direct from the shops where they are.

ENGINE LATHES.

32 in. x 22 ft. Gleason, heavy pattern, triple geared, screw and friction feed, cpd. rest, cross feed, &c. Spindle 9 in. diam.
30 in. x 14 ft. Fifield, blocks to 20 in. swing, rod and screw feeds, cpd. rest, cross feed, &c. Chuck 18 in.
36 in. x 16 ft. Fitchburg, rod and screw, cpd. rest and cross feed.
32 in. x 18 ft. Waterman, heavy pattern, cpd. rest and cross feed, complete, practically new.
30 in. x 10 ft. David W. Pond, heavy pattern, cpd. rest, cross feed and 24 in. chuck, complete.
28 in. x 12 ft. Fay & Scott, heavy pattern, cpd. rest, cross feed and 24 in. chuck.
24 in. x 12 ft. Putnam, rod and screw, complete.
22 in. x 17 ft. Harrington, cpd. rest, &c., complete.
20 in. x 10 ft. Putnam, do. do.
18 in. x 8 ft. Lodge-Barker. do. do.
18 in. x 8 ft. Flather. do. do.
16 in. x 6 ft. Reed, Prentice, Blaisdell and Ames.
14 in. x 6 ft. Blaisdell, Reed and Prentice.
13 in. x 6 ft. Ames, "Special Reverse Feature."
12 in. x 5 ft. Reed.

PLANERS.

16 in. x 3 ft. Pratt & Whitney.
24 in. x 6 ft. Gleason.
26 in. x 10 ft. Ferris & Miles.
30 in. x 6 ft. David W. Pond.
30 in. x 8 ft. Gleason.
32 in. x 7 ft. New Haven.
36 in. x 8 ft. Wheeler Co.
36 in. x 14 ft. Betts Mch. Co.
36 in. x 24 ft. Wm. Sellers & Co., with side head.
38 in. x 8 ft. Pease Co.'s, with side head.
40 in. x 12 ft. Fitchburg Co.'s.
50 in. x 6 ft. Gray Co.'s, spiral geared.

SHAPERS.

9 in. stroke, Hewes & Phillips, crank motion.
10 in. stroke, New Haven, do.
12 in. stroke, Prentiss, do.
16 in. stroke, Standard, do.
20 in. stroke, Improved, do.

UNIVERSAL RADIAL DRILLS.

ft. arm, complete universal with swivel head and arm, heavy pattern, back gears and auto. feed.
5 ft. arm, Box Co.'s semi-universal, swivel arm, back gears and auto. feed.

PLAIN RADIAL DRILLS.

4 ft. arm, improved style with all attachments, including tapping arrangement.
5 ft. arm, "Niles," back gears, hand feed.

UPRIGHT DRILLS.

3-Spindle gang drills, Slate Mch. Co.'s.
20 in. swing, Prentice, auto. feed.
24 in. swing, Ames, back gears, auto. feed.
28 in. swing, Barnes, do. do.
30 in. swing, Prentice, do. do.

SCREW MACHINES.

Pratt & Whitney No. 2, wire feed capacity 9/8 in.
Bardons & Oliver No. 2, wire feed capacity 29-32 in.
Bardons & Oliver No. 3, wire feed capacity 1 5-32 in.
Bardons & Oliver No. 4, wire feed capacity 1 9-16 in., friction head, pump and collets.
Garvin No. 3, wire feed capacity 1 15-16 in., friction head, turret feed, pump, &c.
Davis & Egan, wire feed capacity, 2 in. friction head, turret feed, pump, &c.
Jones & Lamson, wire feed capacity 2⅛ in., friction head, turret feed, pump, &c.

MILLING MACHINES.

Garvin No. 11, auto. feed, arm, vise, &c.
Garvin No. 12, auto. feed, arm, vise, &c.
Garvin No. 1, Lincoln with dbl. sprocket centers.
Bridgeport, heavy pattern, back gears, arm, auto. feed, and vise. Weight 3000 lbs.
Brown & Sharpe No. 1 universal with atts.

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Bevel Shears, capacity 5/8 in., Cleveland Co.'s.
Heavy Punch, 23 in. gap, weight 10,000 lbs.
Double Punch and Shears, Hilles & Jones, wt. 5,000 lbs.
Bending Rolls, 6 ft., with swing housing.
Bending Rolls, 14 ft., "Bement style," swing housing, friction pulleys, all improvements, entirely new.
Plate Planer, Sellers, heavy pattern, 14 ft.

MISCELLANEOUS.

Automatic Gear Cutter, 30 in. for spur and bevel gears, Gould & Eberhardt.
Brown & Sharpe Universal Grinder, 12 in. swing, with extra 26 in. swing head for face grinding.
Slates Mch. Co.'s Cutter and Reamer Grinder.
Pipe Machine, 6 in. "Jarecki," with dies.

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One 18 in. x 32 in. "Rickards" Hor. Corliss Engine. Practically new.
One 16 in. x 32 in. "Fishkill" Hor. Corliss Engine, practically new.
One 200 lb. "Bradley" Helve Hammer.
One 60 in. x 60 in. x 12 ft Planer.
One 39 in. x 39 in x 12 ft. New Haven Planer.

The above are second-hand but in first class condition.

L. F. SEYFERT'S SONS,
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Second-hand Machinery,

IN FINE CONDITION.

60 in. New Haven Pulley Lathe.
21 x 24 Perkins, plain rest and chuck.
20 x 8 Putnam, compound rest, chuck fitted.
16 x 6 Reed, Elevating Rest, chuck fitted.
14 x 6 Hamilton, compound rest.
40 in. New Haven Drill, back geared, power feed.
34 in. Barnes ditto.
26 in. Newton Gear Cutter.
No. 1 Garvin Universal Miller.
No. 4 Frazer Universal Miller.
Punch and Shear, capacity ⅞ hole in ½ in. plate.
No. 2 Punch Press, weight 2200 lb.
Large stock of New Machinery always on hand.

S. M. YORK CO.,
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Second-Hand Railroad Tools

FOR

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Niles Axle Lathe, will take 8 in. through the head.
No. 2 Knowles Keyseating Machine.
400 lb. Pratt & Whitney Drop Hammer.
2500 lb. Double Acting Steam Hammer.
6 ton Single Acting Steam Hammer.
4000 lb. Double Acting Helve Hammer.
3-Head Slotter for locomotive frames, bed 36 ft. long.
3-Spindle Drill for locomotive frames, table 24 ft. long.
15 ton Morgan Electric Crane.
15 ton Jib Crane.
10 ft. Vertical Boring Mill.
6-inch Double Cutting-off Machine, Niles pattern.

Hill, Clarke & Co.,
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16 in. to 32 in. stroke.

J. STEPTOE & CO.,
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14 in., 16 in. and 22 in. Corliss Engines.
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100, 250 and 350 H. P. Westinghouse Compound Engines.
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14 in., 16 in., 18 in., 20 in., 24 in. and 36 in. Screw Cutting Lathes.
16 in., 20 in., 24 in., 36 in., 54 in. and 60 in. Planers.
36 in., 50 in. and 60 in. Radial Drills.

Vertical and Horizontal Boring Machines, Screw Machines and large Turrets, Punch and Shears, and a large stock of Boilers, Pumps, Wood Working Machinery, Dynamos, Motors and Electrical Supplies.

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Nos. 129 and 131 N. Third St., Phila., Pa.

Second-hand and New Machine Tools.

LATHES
16 in. x 7 ft. Harrington.
25 in. x 8 ft. Putnam, not s. c.
26 in. T. C. Lathe, 3⅝ in. hole in spindle. Tool front and back.

PLANERS.
24 in. x 24 in. x 6 ft. Whitcomb.
24 in. x 24 in. x 8 ft. Smith-Silk.
26 in. x 26 in. x 8 ft. Putnam.

DRILLS.
20 in. Wheel & Lever Drill.
20 in. Wheel & Lever, B. G.
24 in. B. G. P. F. A. S.
28 in. B. G. P. F. A. S.
32 in. B. G. P. F. A. S.
40 in. B. G. P. F. A. S.
1 Henley Swing Drill.
14 in. Aurora Sensitive.
16 in. Sensitive, Flickinger.

MISCELLANEOUS.
16 in. x 6 ft. Fox Monitor.
24 in. Pulley Lathe.
24 in. Turret Lathe, 4500 pound.
26 in. Pulley Lathe.
Harrington Suspension Drill No. for plate Work.
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Emery Stands for two wheels 1 in. x 2 in.
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Sellers Twist Drill Grinder.
Tool Grinder.

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General Machine Shop Use.

20 in. x 8 ft. F. E. Reed Engine Lathe.
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84 in. x 18 ft. Engine Lathe.
No. 0 Pratt & Whitney Screw M'ch'e with wire feed.
⅝ in. Cleveland Automatic Screw Machine.
No. 3 Davis & Egan Screw Machine with wire feed.
No. 4 Bardons & Oliver Screw M'ch'e with wire feed.
18 in. Brainard Hand Gear Cutter.
30 in. x 30 in. x 8 ft. Fitchburg Planer.
32 in. x 32 in. x 8 ft. Lathe & Morse Planer.
36 in. x 36 in. x 9 ft. New Haven Planer.
2-Spindle Profiling Machine.
Radial Drill made by Dietz, Gang & Co., drills to centre of 80 inches.

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1 Planer 72 in. x 36 in. x 9 ft., two heads.
1 Planer 60 in. x 60 in. x 14 ft., Screw feed, cheap.
1 Iron Planer, 36 in. x 36 in. x 14 ft.
1 Iron Planer, 28 in. x 30 in. x 6 ft., Fitchburg make.
1 Engine Lathe, 42 in. x 14 ft.
1 Engine Lathe, 22 in. x 14 ft., with chuck.
1 Heavy Pit Lathe, to swing 10 ft.
1 1000 lb. Steam Hammer.
1 3000 lb. Miles Steam Hammer.
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1 250 lb., 1 200 lb. Farrell Drop.
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1 7 H. P. Otto Gas Engine.
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1 No. 3 Bell Steam Hammer.
1 8-Spindle Drill.

Machinery appraised any part of country.

NEW YORK MACHINERY DEPOT,
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Brown & Sharpe Screw Machine.

With Automatic wire feed, automatic chuck and power feed to turret. Hole through spindle 1 1-16 in., through wire feed 11-16 in. Weight about 1500 lbs. Fine condition.

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1 13 x 5 Plain Turret Lathe.
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1 15 x 8 Muller.
1 18 x 8 Lodge & Davis.
1 18 x 7 Pond.
1 18 x 8 Putnam.
1 18 x 8 Lodge & Barker.
1 18 x 10 Steptoe-McFarlan.
1 20 x 8 Pond.
1 25 x 18 Leonard.
1 24 x 16 Sellers.
1 26 x 20 Pond.

PLANERS.
1 17 x 17 x 4 Putnam.
1 30 x 30 x 8 New Haven.

DRILLS.
1 26 in. Barnes Drill.
1 28 in. National Drill.
1 5 ft. Niles Half Universal Radial Drill.
1 Wall Radial Drill.

SHAPERS.
1 15 in. Betts Travelling Head.

SCREW MACHS.
1 7/8 Screw Machine.
1 No. 3 Pratt & Whitney, Friction Head.
1 No. 3 Pratt & Whitney, Plain Head.
1 Davis & Egan Hub Machine.

MISCEL.
1 Garvin Hand Milling Machine.
1 1½ in. Pratt & Whitney Cutting-off Machine.
1 Newton Keyseater.
1 Valve Milling Machine.
1 5 in. Cutting-off Machine.
1 15 x 5 Lodge & Davis Hand Lathe.
1 600 Light Dynamo.

NEW TOOLS.

Engine Lathes, 14 to 60 in. swing.
Planers, 24 to 54 in. wide.
Drill Presses, 12 to 42 in. swing.
Radial Drills, 3, 4, 5 and 6 ft. Arms.
Shapers, 14, 16, 21 and 26 in. stroke.
Plain Milling Machines (4 sizes).
Universal Milling Machines (3 sizes).
⅝, ¾, 1⅛, 1⅝ and 2¼ in. Screw Machines.
14, 16 and 18 in. Monitor Lathes.
12, 14 and 15 in. Hand Lathes.
1⅝ in. and 2 in. Automatic Bolt Cutters.

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FOR SALE.

15 Automatic Screw Machines, 35 Pratt & Whitney Screw and Chucking Machines and over 200 other tools.
Catalogue now ready.

A. B. PITKIN MACHINERY CO.,
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Second-hand Machinery.

ENGINE LATHES.
1 84 in. x 18 ft. Wheel Lathe.
1 54 in. x 22 ft. Pond Lathe, Triple R. G.
1 26 in. x 14 ft. Fitchburg C. R.
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4 20 in. 8 to 10 ft. Engine Lathes.
15 18 in. x 6 to 10 ft. Engine Lathes.
38 14 in., 15 in. and 16 in. Lathes, various makes.

PLANERS.
1 40 in. x 36 in. x 8 ft. Old Style.
1 36 in. x 36 in. x 9 ft. New Haven.
1 30 x 30 x 10 Putnam.
1 24 x 24 x 6 Whitcomb.
1 24 x 24 x 5 Pond.
1 16 x 16 x 4 Hendey.

SHAPERS
1 26 in. Hendey.
1 15 in. "
1 12 in. "
1 20 in. G. & E.
1 14 in. Putnam Traveling Head.

MILLING MACHS.
1 No. 4 Cincinnati Univ.
1 No. 2 " Plain.
1 No. 2 Garvin Plain.
1 No. 13 B. & S. Plain.
2 No. 12 B. & S. Plain.
2 Ames Lincoln.
1 No. 3 P. & W. Lincoln.

DRILLS.
1 40 in. Bickford.
1 28 in. Barnes.
1 26 in. Kirkhoff.
1 25 in. Barnes.

MISCELLANEOUS.
1 54 in. Bement Boring and Turning Mill.
1 12 in. Bement Slotter.
1 25 lb. Bradley Helve Hammer.
1 80 lb. Bradley Helve Hammer.
1 50 lb. Bradley Upright Cushioned Hammer.
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1 Davis & Egan Screw Machine, 2⅝ in. wire feed.
1 14 in. Wheel Borer.

Also complete line of improved new machine tools. Write us for anything you want.

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Iron Workers!

I want to sell quickly

Two Heavy Bolt Headers with dies.
One 1½ in. Could Bolt Cutter.
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One Single Punch ¼ in. x ⅝ in.
One 13 in Alligator Shear.
One 3 in. Alligator Shear.
One Angle and Plate Slitting Shear
One 100 in. Guillotine Morgan Plate Shear.

THOMAS P. CONARD,
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FOR SALE.

16 x 30 Corliss Engine.
18 x 32 Buckeye Engine.
18 x 42 Wright "
22 x 33 Buckeye " Tangge bed.
24 x 48 Wright "
20 40 x 36 Compound Wright Corliss Engine.
24 42 x 48 " " Engine.
14½ x 26 x 22 " McIntosh & Seymour Engine.
15 x 26 x 17 " " "
10 Frisble Friction Pulleys, 60 in. x 20 in., 100 H. P. each.
180 ft. Shafting, and Brown's Hangers, 4 7-16 in.
48 in. 8 ply Leather Belt, 85 ft. long.
22 x 12 x 24 Davidson Pump.
12-18½ x 10¾ x 10 Compound Worthington Pump.
10-16 x 10¼ x 10 " " "
7-16 x 6 x 18 " Blake "

MARVIN BRIGGS,
12 B'way, N. Y. City.

Second-hand Machinery.

1 Bement-Miles Hydraulic Riveter.
8 ft. gap, with pump, accumulator, punches, dies, etc., complete.
1 Set Power Bending Rolls. 9 ft.
1 Multiple Punch. Long & Allstatter.
43 in. between housings, spacing table.
2 Punches. 22 in. throat.
1 Shear. 33 in. throat.
1 Punch. 25 in. throat.
1 No. 4 Root's Positive Blast Blower.
1 Complete tin can factory equipment, with 60 machines.

READE & BOWLER,
216-217 American Trust Building,
CLEVELAND, O.

Machine Shop
FOR SALE.

Tools used in Piano Factory and will be sold in lots to suit; all in first-class shape and condition and comprising principally the following:

2 Brainard Small Hand Milling Machines.
1 Brainard No. 5 Standard Milling Machine, with Vise and Index Centres.
3 No. 5 Jones & Lamson Screw Machines, wire feed, capacity to ½ inch.
1 No. 5 Horton Toggle Single Action Press, 6000 lbs.
1 Each No. 0, 1, 2, Howard Single Action Press.
1 Perkins Rack Cutting Machine, 30 in. feed; small single and double spindle Threading and Tapping Machines to 5-16 in.; Emery Grinders; 10 in. to 16 in. Special Lathes and 13 in. x 5 ft. Blaisdell Engine Lathes.

Correspondence solicited. Address for particulars,
S. T. LUND, 54 Oliver St., Boston, Mass.

CORLISS ENGINES.

1 14 x 30 Lane & Bodley, 9 ft. Band Wheel, 18 in. face.
1 16 x 42 left hand, 7 ft. Band Wheel and 12 ft. Fly Wheel.
1 24 x 48, 18 ft. Band Wheel, 40 in. face.

BOILERS.

4 72 in. x 18 ft. long, 72 4 in. flues, fitted with Hawley Down Draft Furnaces.

WM. C. JOHNSON & SONS MCH. CO.,
St. Louis, Mo.

BOILERS.

3 125 H. P. Loco. Style, 100 lbs. steam pressure.
2 100 H. P. Loco, Style (Wooten fire boxes).
7 80 to 100 H. P. Loco. style, 100 lbs. steam.
1 80 H. P. Horizontal Tubular (good as new).
2 50 H. P. Horizontal Tubular (fine condition).

Above will be sold with fittings complete at bargain prices. Steam pressure guaranteed and policy of insurance furnished.

POULTERER & CO.,
410 Bullitt Bldg., Phila., Pa.

FOR SALE.

26 x 60 Automatic Engine, Band Fly Wheel 18 ft. x 40 in., built by C. H. Brown & Co., Fitchburg, Mass.

FRANK McSWEGAN & SONS,
Dover St. and Franklin Square, N. Y.

Second-Hand Machinery.

Engine Lathes.
13 in. x 6 ft. Ames.
14 in. x 6 ft. Prentice.
16 in. x 6 ft. Ames.
18 in. x 12 ft. Bozart.
27 in. x 12 ft. W. & L.
16 in. x 8 ft. Pattern Maker's.

Screw Machines
No. 2 Wire Feed.
No. 2 P. & W., plain.
No. 2½ P. & W., W. F.
No. 4 Windsor, plain.
No. 4 Windsor, W. F., auto.
No. 2 Niles, heavy.

Planers.
16 in. x 16 in. x 4 ft.
20 in. x 20 in. x 5 ft.
24 in. x 24 in. x 4 ft.
25 in. x 25 in. x 10 ft.
28 in. x 28 in. x 8 ft.
36 in. x 36 in. x 12 ft.
48 in. x 48 in. x 15 ft.
60 in. x 60 in. x 22 ft.
72 in. x 72 in. x 40 ft., 3 heads.

Shapers.
9 in. T. H., Sellers.
13 in. T. H., Bement.
20 in. G. & E.

Drills.
6 Spindle, Quint.
Pond Suspension.
22 in. G. & E., geared.
24 in. Ames, geared.
32 in. G. & E., geared.
32 in. Harris, geared.
Combined Drill and Slotter.
4 spindle Ames.
Bicycle Frame Drill.

Millers.
Lincoln Type, P. & W.
Hand Miller, Ames.
Special Cam Miller.
Double Head Cam Miller P. & W.

Miscellaneous
24 in. Lead Lap. Mch.
No. 2 W. T. Grinder.
Centering Machine.
24 in. Gear Cutter.
36 in. H'd Gear Cutter.
48 in. x 12 ft. Hor. Boring and Drill. Machine.
12 in. Splitting Shear.
Car Mortiser & Borer

We have named above only our choicest tools. Write us for anything you want. Prices on application.

The Niles Tool Works Co.

136-138 Liberty St., New York City.

Screw Machines.

No. 3 Cleveland Automatic, plain, wire feed.
2 No. 1 Pratt & Whitney.
No. 3 Windsor, wire feed, new.
No. 4 Windsor, back gears, wire feed, new.
No. 3 Pratt & Whitney, wire feed.
No. 2½ Garvin, friction back gears, spring chuck.
No. 3 Garvin, friction back gears, spring chuck.
No. 3 Warner & Swasey, friction back gears, wire feed.
No. 4 Bardons & Oliver, friction back gears, wire feed.
No. 6 Warner & Swasey, friction back gears, wire feed.
Davis & Egan Hub Machine, complete.

Marshall & Huschart Machinery Co.,

62 64 S. Canal St., Chicago, Ill.
19 S. Water St., Cleveland, O.

PLATE MILL.

Magnificent 22-inch, two-high plate train of rolls, all complete ready to run on nail plate, skelp, or sheets Weight, 100 tons. Price 1c. per pound.

SCHULTZ & CO.,
Rothschild Bldg., Phila., Pa.

Second-Hand Machinery.

IN EXCELLENT CONDITION.

LATHES.
36 in. x 18 ft. Fifield.
25 in. x 12 ft. S. C. Forsaith.
21 in. x 16 ft. S. C. Forsaith.
18 in. x 8 ft. Blaisdell.
16 in. x 6 ft. Reed.
16 in. x 6 ft. Porter.
15 in. x 6 ft. Porter.
12 in. x 5 ft. Silk.
10 in. x 4 ft. Frasse.
1 15 x 5 Speed Lathe.
1 16 in. x 5 ft. Friction head, Warner & Swasey monitor.
1 36 in. Putnam Pulley Lathe.
17 in. x 17 in. x 4 ft. Putnam Planer.

Hand Miller, Garvin.
Lincoln Miller, Pratt & W.
12 in. x 5 ft. Turret Lathe
No. 3 Power Press, R. & K.
No. 4½ B. G. Garvin Miller.
1 100 ton Hydraulic Car Wheel Press.
1 36 in. Car Wheel Borer.
1 1 in. Double head Acme Bolt Cutter.
1 ⅛ in. 4-spindle Acme Nut Tapper.
5 Diamond Grinders.
25 Horse Power Motor.
25 in. Barnes Drill.
1 250 Light Dynamo.

Also full line latest improved new machine tools.

J. B. DOAN & CO.,
68 and 70 South Canal Street, Chicago.

FOR IMMEDIATE DELIVERY.

72 in. vert. boring and turning mill, 2 hds., new, made by H. Bickford.
50 in. Bickford vert. boring and turning mill, one head, fine condition.
4 in. bar, 7 ft table, Betts hor. boring and drilling machine, power lift, all complete, fine order.
4 in. bar, 7 ft. table, New Machine Co., ditto, good as new.
50-60 x 18 Fifield Tool Co. engine lathe, triple grd. head stock, latest pattern, new.
36 x 18 Putnam Standard, latest pattern, engine lathe, triple grd., head stock, new.
42 x 22 ditto.
No. 2 Bickford radial drilling machine with tapping attach., new.
74 x 51 x 24 Betts metal planer, all complete, fine order.
244 x 42 x 5 ditto
60 x 60 x 10 ft. Bement Planer, 1 head on cross rail, 1 side head, all complete, good order.
30 x 30 x 8 L. W. Pond Machine Co., metal planer, latest pattern, new.
54 x 48 x 12 ft. L. W. Pond Machine Co., metal planer, 2 heads, latest pattern, delivery 5 weeks.
Also a full line of crank, friction and belt shifting shapers, new.
Send for complete lists of new and second-hand tools.

PRENTISS TOOL & SUPPLY CO.,
115 Liberty Street, New York City.
Buffalo Office, 603 D. S. Morgan Bldg.

ROLLING MILL MACHINERY FOR SALE.

1 3-high Plate Mill with extra rolls.
1 21-in. Puddle Mill with extra rolls.
9 Double Puddle Furnaces.
1 Guillotine Shear, 87 in. knives.
1 Alligator Shear, 27 in. jaw, will cut 2 in. by 12 in. steel slabs, or 5 in. axles.
1 Rotary Shear; will shear ½ in. plates.
4 Muck Bar and Bar Iron Shears.
1 Large Steam Hammer.
2 Steam Jib Cranes.
1 Rotary Squeezer with engine, 48 in. drum.

All the above machinery is in good condition and will be sold separately. Address

JOS. H. McCLURE & SON
202 Walnut Place, Philadelphia.

I buy Iron and Metal Scrap and wish to hear from anybody having cotton ties, pipe, hoops, cast borings, wrought and steel turnings, boilers, cast scrap, etc. Also wrecks from fire, etc.

ROBERT M. CUNLIFFE,
1140-42 Washington Ave., Phila., Pa.

FOR SALE.

Four fly wheels, each 25 feet in diameter, weighing 42 tons each, built in 12 segments and two centers, with rims turned and faced. We built these wheels for our own tin mills, and after a few months' use of them replaced them with heavier wheels. Will be sold low.

MACKINTOSH, HEMPHILL & CO.,
Pittsburgh, Pa.

ROLLING MILL

For Sale or Lease.

The property known as the Seyfert Rolling Mills is offered for sale or lease.

This Mill is located on the Wilmington & Northern R. R., five miles from Reading, Pa., and is equipped for making Sheared Pipe Skelp, Sheet Iron, Plate Iron and Puddled Bars.

The property is in perfect condition and can be started up in 24 hours time. Is, without doubt, one of the best mills in the state; has always been a money-maker and should prove a very desirable and profitable investment to anyone desiring to go into the iron business.

This Mill would be indispensable to the Wrought Iron Pipe Trust now forming.

For terms or particulars, apply or address

SAM'L R. SEYFERT & BRO.,
Reading, Pa.

SECOND-HAND

Metal-Working Machinery

At Bargain Prices.

Lathes.

One 13 in. x 6 ft. Ames plain turning lathe.
Two 13 x 5 Ames raise and fall rest and special feature.
Three 13 x 6 Ames raise and fall rest and special feature.
One 16 x 6 Ames P. G. rest, taper and hollow spindle
Two 16 x 6 Ames R. & F. rest and special feature.
Two 16 x 8 Ames R. & F. rest and special feature.
One 16 x 12 Ames plain gib rest and special feature.
One 90 x 20 Ames power angular feed lathe.
One Bement single axle lathe.

Planers.

32 x 32 x 6 L. W. Pond.
32 x 32 x 10 Ames Mfg. Co.
36 x 36 x 8 Geo. C. Howard.
36 x 36 x 10 Putnam Mch. Co.
60 x 60 x 11 L. W. Pond.
29 x 29 x 9 screw.

Miscellaneous.

10 ft. x 6 in. Bement Miles & Co. plate bending rolls.
Set of heavy plate bending rolls.

Miscellaneous.

9-in. stroke Bement slotting machine.
10-in. stroke New Haven slotting machine.
12-in. stroke Bement slotting machine.
12-in. stroke Hewes & Phillips slotting machine.
14 ft. x 6 in. Wm. Sellers & Co. plate planing machine.
24-in. Brainard type semi-automatic gear cutter.
No. 2 Pratt & Whitney die sinking machine.
2-spindle Ames profiling machine.
No. 1 Pratt & Whitney wire feed screw machine
Three No. 2 Pratt & Whitney wire feed screw machines.
14-in. Ames wire feed screw machine.
14-in. Ames friction head screw machine.
8 in. Hurlbut & Rogers cutting-off machine.
No. 3 Ames 3-spindle gang drill.
Two Pratt & Whitney 5-spindle nut tappers.
One Bement 6-spindle nut tapper.
One Bement hydraulic rail bending machine.
One Burdict ¾ in. to 1 in. bolt heading machine.

It is our intention to carry in stock a first-class line of Second-Hand Machinery. If you want to buy or sell, do not fail to communicate with us. As our stock will be changing constantly, it will be wise to let us know what you require.

MANNING, MAXWELL & MOORE,
111-113 Liberty St., N. Y. City.
Branches at Chicago and Pittsburg.

ENGINES, 42 in. dia. and smaller.
BLOWING ENGINES, for Blast Furnaces, Foundries and Converters.
MILL TRAINS (3-high), 20 in., 18 in., 12 in., 10 in., 8 in. and 6 in.
SHEARS, for Blooms, Billets, Plates, Sheets, Old Rails and Scrap.
CRANES, Jib Cranes, Iron and Wooden.
STEAM HAMMERS, various sizes and makes.
SQUEEZER (Rotary), 48 in. drum.
FLY WHEELS AND BAND WHEELS, various sizes; Punches, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, &c., &c.
LOCOMOTIVES, various gauges, sizes and styles.

B. M. EVERSON,
301 Smithfield St., Pittsburgh, Pa.
Sales Agent BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa.

For Immediate Delivery.

Twelve 10 in. Foot Power Engine Lathes.
Twelve 10 in. Power Engine Lathes
Twelve 12 in. x 5 ft. Engine Lathes.
Twelve 14 in. x 6 ft. Engine Lathes.
Six 17 in. x 6 ft. Engine Lathes.
Six 17 in. x 8 ft. Engine Lathes.

These Lathes are our own make and guaranteed first-class in every particular. Price low and can ship on receipt of order. We also build 3 in. and 4½ in. Cutting off Machines, Keyseaters and Upright Drills. Send for photographs and catalogue.

The W. P. Davis Mch. Co.,
ROCHESTER, N. Y.

FOR SALE.

1 32 in. x 108 in. Plate Mill, Roughing Rolls 2[illegible] in. x 84 in.; live tables and Vertical Table Engines.
1 Pair 36 in. x 40 in. Horizontal Reversing Engines.
1 110 in. Guillotine Plate Shear.
1 24 in. x 70 in. Blooming Mill, with 28 in. x 42 in. Reversing Engines, with gearing, tables and table engines.
1 18 in. 3-high Bar Mill.
1 20 in. 3-high Sheet Mill.
2 10 in. 3-high Guide Mills.
Engines, Shears, Punches and Cosgrove Straightener.
2 Hoisting Engines.
7 Boilers.
Engine Lathe, Roll Lathe, Planer Drill Press and Blowers.
1 10 ton Standard Gauge Locomotive Crane.
Supply and Hydraulic Pumps and Cranes.

A Large lot of other machinery such as used in large steel works.

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh, Pa.

FOR SALE.

1 27 in. x 27 ft. L. & D. "Standard" Engine Lathe, Taper Attachment. At once.

The Lodge & Shipley Machine Tool Co.,
Cincinnati, O., U. S. A.

FOR SALE.

17 pairs Alligator and Rotary Shears cutting from one inch to six inch cold Steel Axles. Can be seen at Catasauqua, Pa.

Apply

WM. ECKBOLDS' SONS,
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For Quick Delivery.

1 Shear with Engine 126 inch, used.
1 Roll for straightening light plates, used.
1 Roll 40 inch for sheets, new.
2 Hackney Hammers.

WAIS & ROOS P., S. & ROLL CO.,
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BARGAINS.

Baker Blowers, Nos. 2, 5½ and 7.
Root " Nos. 2, 3, 4, 6 and 7.
18 in. x 42 in. CORLISS ENGINE (WATTS & CAMPBELL). Right hand, 16 ft. x 32 in. segment wheel. Something fine. Immediate delivery.
22 in. x 42 in. WRIGHT AUTOMATIC ENGINE. Right hand, 16 ft. x 36 in. wheel.
Horizontal Boilers, Bigelow make, 66 in. x 15 ft., 108 3 in. tubes, and 72 in. x 16 ft., 132 3 in. tubes. Now insured for 90 lbs. by Hartford Ins. Co.

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SECOND-HAND

Steam Power Hammers

AND

Power Presses

FOR SALE.

BEAUDRY & CO.,
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Second-hand Tools.

U. Baird Machinery Co.

323-325 Water St., 392-394 First Ave.,

PITTSBURGH, PA., U. S. A.

8 in. x 10 in. Norwalk Air Compressor.
10 in. x 12 in. " " "
2 in. Acme Bolt Cutter.
18 in. Pulley Borer.
No. 5 Rotary High Pressure Blower.
36 in. Gould & Eberhardt Spur Gear Cutter.
80 lb. Merrill Air Cushioned Hammer.
36 in. x 28 ft. Betts Engine Lathe.
36 in. x 14 ft. New Haven Engine Lathe.
20 in. x 8 ft. Fitchburg Engine Lathe.
20 in. x 14 ft. Harrington Gap Lathe.
16 in. x 5 ft. Bullard Engine Lathe.
16 in. x 6 ft. Blaisdell Engine Lathe.
14 in. x 6 ft. Ames Engine Lathe.
14 in. x 5 ft. Reed Engine Lathe.
60 in. New Haven Pulley Lathe.
30 in. x 30 in. x 7 ft. New Haven Planer.
48 in. Alfred Box & Co. Radial Drill.
24 in. Hendey Shaper.
Garvin Tapping Machine.
Cincinnati Universal Cutter and Reamer Grinder.
Davis & Egan Oil Separator.

File Factory

FOR SALE

On Saturday, April 1, 1899, the plant of the late McClellan File Co. will be sold at the Saginaw County Court House, by Circuit Court Commissioner, to satisfy mortgages about one-third the value of the plant, which will be sold entire comprising real estate, buildings and all machinery.

The factory has a capacity of 500 dozen files per day, and is one of the most thoroughly equipped file factories in the country.

Plenty of cheap fuel. An elegant opportunity on a small capital to manufacture files for the trade, or to operate it as a recutting factory. For further particulars address

GEO. J. LITTLE, Saginaw, Mich.
For Mortgagees.

FOR SALE.

1 200 H. P. Wheelock Engine.
1 60 H. P. Armington & Simms Engine

A large lot of new and second-hand Iron and Wood Working Machinery on hand. Do not fail to write us if you want to buy or sell.

THE THOMAS & LOWE MACHINERY CO.,
51 Washington St., Providence, R. I.

CHEAP.

Cameron Pumps.
Centrifugal Pumps.
Root Blower No. 2.
Large Sturtevant Blast Wheels.
Exhaust Fan, Ventilating Fans.
Guild & Garrison Double Vacuum Pump.

Above all in **perfect condition,** used only **two weeks** and will be sold **very low.**

VARIETY MACHINE CO.,
Warsaw, N. Y.

For Sale.

1 28 x 54 Hamilton Corliss Engine.
2 26 x 54 Lane & Bodley Corliss Engines.
1 18 x 42 Hamilton Corliss Engine.
1 13 x 14 Ideal Automatic Engine.
1 12 x 34 Brown Automatic Engine.
1 30 x 30 x 8 Whitcomb Planer.
1 50 in. Stevens Pulley Lathe.

WICKES BROS., Saginaw, Mich.

HEAVY TOOLS.
For Quick Delivery—Good as New.
Column Lathe, 54 in. x 30 ft., Solid Cast Base, 2 Heads. Splendid Tool.
4-Spindle Drill Press, Movable Spindles and Table. Quick and Accurate. Heavy Tool. Finest Condition. H. E. PERRY, 3923 Union Av., Chicago

See Our Bargains.

Direct Current Dynamos of 55, 150, 270, 350, 700, 725, 800, 810, 900, 1,075, 1,350, 1,610 and 2,500 light capacity.

Alternating Current Dynamos of 750, 900, 1,300 and 2,000 light capacities.

Arc Dynamos: 20, 24, 30, 40, 50 and 60 light, both 1,200 and 2,000 candle power.

Engines: 12, 50, 75, 85, 100, 115, 125, 150, 175 and 200 H. P.

Boilers: 50, 100, 250, 375 and 500 H. P.

Heaters: 150, 1,000 and 2,000 H. P.

Steam Pumps, 100, 150, 500, 750, 2000 and 3000 gallons per minute.

SEND FOR OUR PRICE LIST NO. 24.

Most of this apparatus has been removed from our own central stations to make room for larger units and is therefore in excellent condition.

CHICAGO EDISON COMPANY,
139 ADAMS ST., CHICAGO, ILL.

FOR SALE OR RENT.

Large Foundry Plant fully equipped. Has exceptional shipping facilities over two belt and one trunk line railroads. Located just outside Chicago. For particulars address

"FOUNDRY PLANT,"

Care *The Iron Age*, 805 Fisher Bldg., Chicago.

NAIL MACHINES

For Sale.

All sizes Wire and Cut Nail and Tack and Shoe Nail Machines. Anything you want in the tack and nail line.

JESSE ATHERTON, Auburn, R. I.,
Dealer in second-hand Tack and Nail Machinery

FOR SALE.

A Lot of Mining Machinery in First-Class Condition

One 550 H P Tandem Compound Corliss Engine, with Plunger Condenser, and heavy driving gear.
One Lidgerwood Hoisting Engine, link motion, with 14 x 18 in. cylinders and 10 ft. divided drum.
One slide valve Engine, cylinders 16½ x 36 in., with 15 ft. balance wheel.
One slide valve Engine, with 16 in. cylinders, 42 in. stroke.
One Morris County Air Compressor, cylinders 12 x 18 in.
23 Ingersoll-Sargent Air Drills, 2 in., 2¾ and 3¼ in. cylinders.
Two Boilers, 5 ft. diameter, 17 ft. long, with 60 3¼ in. flues.
Two Boilers, 5 ft. diameter, 18 ft. long, with 57 3¼ in. flues.
Two Boilers, 4 ft. 6 in. diameter, 14 ft. 6 in. long, with 68 3 in. flues.
One Boiler, 4 ft. diameter, 15 ft. 6 in. long, with 48 3 in. flues.
One Boiler, 4 ft. diameter 13 ft. long, with 54 3½ in. flues.
One Locomotive, built by H. K. Porter Co., weighing 3½ tons, 5 in. cylinders, 6 in. stroke, gauge 2 ft. 4 in.
Also Cameron, Knowles, and Blake Steam Pumps, in various sizes.

For further particulars and prices please address

THE MT. PLEASANT MINING CO.,
68 Wall St., N. Y. City.

FOR SALE CHEAP.

Two or three Iron Carriages for Core Ovens. Capacity 10 to 30 tons.

BRIDGEPORT DEOXIDIZED BRONZE & METAL CO.,
Bridgeport, Conn.

Second-Hand Equipment

FOR SALE.

2 12 in. Condensers, made by L. Schutte & Co.
2 12 in. Injectors, Korting's patent, made by L. Schutte & Co.
1 No. 2 Portable Drill, made by Thorne & De Haven.
1 No. 4 Steam Rock Drill, made by Vulcan Iron Works.
6 Planer or Shaper Chucks or Vises.
1 Cylinder Boring Machine.
2 Twin Horizontal Steam Pumps, 6 in. suction, 10 in. discharge.
1 Riehle Bros. Railroad Track Scale.
25 Pair of Portable and Wagon Scales, 600 to 20,000 lbs. capacity.
30 Pair 30 in. Gauge Wheels and Axles.
10 Two Wheel Furnace Charging Buggies, new.
1 Lot of Standard Taps, Reamers and Twist Drills.
1 Testing Machine, made by Tinius Olsen & Co., 200,000 lbs. capacity.
2 10 in. 3 High Bar Mills with 312 extra rolls.
1 22 in. x 60 in. 2 and 3 High Plate Mill.
1 18 in. 2 High Bar Mill with 101 extra rolls.
1 21 in. 3 High Bar Mill, 75 extra rolls.
1 15 in. 3 High Bar Mill with 64 extra rolls.
1 18 in. 2 High Muck Mill, 13 extra rolls.
30 Single and Double Heating Puddle Furnaces, complete with all plates, boilers, stacks and all necessary fixtures.
100 Tons of Puddling and Heating Furnace Tongs and Tools.
Large quantity of Cinder Buggies and Carriages used around furnaces and roll trains.
500 Tons of Floor Plates, principally 2 x 4 x ¾ in.
6 Straightening Beds.
8 Roll Turning Lathes.
3 Squeezers.
1 Chaser Mill.
50 Machinist and Blacksmith Leg and Bench Vises.
35 Vertical and Horizontal Engines from 4 to 500 H. P.
8 Sturtevant Fans or Blowers from 5 in. to 30 in. blast opening.
1 Large Steam Vertical Straightening Machine.
3 Angle or Bar Straightening Machines.
12 Hand or Power Driven Radial Cranes from 2 to 10 tons capacity.
2 Power Driven Overhead Traveling Cranes made by Yale & Towne.
Large quantity Shafting, Pulleys, Hangers and Steam Pipe.
100 Wrought Iron Plates, 11 ft. 3 in. x 39 in. x ¼ in.
100 " " " 11 ft. 3 in. x 39 in. x ⅜ in.
24 " " " 10 ft. x 54 in. x ½ in.
33 lengths 10 in. Cast Iron Water Pipe, good as new.

We can make immediate shipment of all kinds of machinery or equipment for rolling mills or blast furnaces.

C. R. Baird & Co.,

PIG IRON,

PHILADELPHIA.

INVESTIGATE.

Drop Presses.

One E. W. Bliss 800 lb. Automatic Board Drop, fitted with hand and foot treadle, no poppets, hammer and anvil dovetailed to hold dies, construction similar to Bliss Drop shown on page 242 of their new catalogue, in good order.

One E. W. Bliss 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, hammer and anvil dovetailed to take dies, similar to above description, in good order.

One Morrill Brothers 1,000 lb. Automatic Board Drop, fitted with hand and foot treadle, also steel uprights, has 6 ft. drop, with one extra hammer weighing 1,500 lbs., hammer and anvil fitted with dovetail to take dies, in good order.

Ready for Delivery May 1st, 1899.

One Arch Power Press with Dial Feed. Good Order.

One three spindle Lathe, 12 in. x 6 in. swing, 8 ft. bed, no countershaft. Good Order.

One Quint Drill, Turret Head. In A1 Order.

One Tapping Machine. In A1 Order.

One Automatic Milling, Drilling and Tapping Machine for finishing battery zincs. Can be adapted for other work of a similar character. In A1 Order.

One Semi-Universal Milling Machine, Mossberg Make. In A1 Order.

MOSSBERG & GRANVILLE MFG. CO.,
PROVIDENCE, R. I.

FOR SALE.

Norristown Iron Works.

Complete Wrought Iron Pipe Works in condition for ***immediate operation,*** consisting of ***complete Skelp Mill,***

6 Double puddling furnaces,

3 Heating furnaces,

3 Trains of rolls; also

2 Butt Weld Pipe Furnaces and all threading machines complete.

The property will be sold for the value of real estate and buildings.

Apply to owner,

FRANK SAMUEL,
Harrison Building,
Philadelphia.

The Blast Furnace with this property will be dismantled. The Blowing Engines, Pumps, Dynamo, etc., are for sale.

For Sale.

An established manufacturing business, running, and at present employing forty hands. Several months' orders ahead. Shops will be rented or sold as desired, and room can be had if wanted to more than double the present capacity. Best of reasons for selling.

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FOR SALE.

Rolling Mill at Bristol, Pa., well equipped for making Bars, Band and Hoop Iron.

RODMAN WISTER,
Trustee,
672 Bullitt Bldg., Philadelphia, Pa.

FOR SALE.

The following boiler iron, high pressure, round gas tanks. Good as new:

2 tanks 12 ft. by 2 ft. 6 ins.
7 " 10 ft. by 2 ft. 8 ins.
6 " 10 ft. by 2 ft. 6 ins.
1 " 10 ft. by 3 ft.

RICHARDSON & COMPANY, Inc.,
Pittsburgh, Pa.

FOR SALE.

A SECOND-HAND STEAM HAMMER.

30 in. stroke, 1100 lb. hammer, 7800 lb. anvil, made by Morgan Williams & Co. of Alliance, O. In perfect working order. Price $500 f.o.b. Taunton. A decided bargain. Address

TAUNTON LOCOMOTIVE MFG. CO.,
Taunton, Mass.

FOR SALE.

Large Foundry and Machine Shop plant in Chicago. Foundry fully equipped. Machine shop partially. Plant splendidly located. Ample grounds and fine railroad switching. For sale or rent. Address

"O. C.,"
care *The Iron Age*, 805 Fisher Bldg., Chicago

TWO WATER TUBE BOILERS FOR SALE.

One Stationery, 10 H. P., price $150.
One Marine, 5 H. P. Inland waters only; height 3 ft. 6 in., width 30 in., weight 400 lbs.; 150 lbs. steam pressure; suitable for launch; price $115 net cash.
Boilers all steel, no bricks, no castings. Send for my catalogue.

E. P. WATSON, Elizabeth, N. J.

FOR SALE.

SHEET MILL AT BEAVER FALLS, PA.

2 22 in. Sheet Mills.
1 Pair Soft Rolls.
1 Pair Cold Rolls.
Bar Mill, Steam Hammer, Engines, Boilers, Furnaces, etc. Will sell machinery alone, or with land as preferred.

H. W. McKEE,
341 Fourth Ave., Pittsburgh, Pa.

BARGAINS.

12 18¾ x 12 Hor. Auto. Tandem Compound Engine.
100 H.-P. Cross Compound Hor. Auto. Engine.

SECOND-HAND.

4 x 6 Vert. Engine.
10 x 7 Vert. Engine.
9 x 12 Hor. Auto. Engine.
9 x 9 Hor. Auto. Engine.

NEW YORK SAFETY STEAM POWER CO.,
107 Liberty St.

WANTED.

Man of ability to handle Pneumatic Hammers and Drills, lately patented, and having great success in the West. We desire to place general agency for Eastern and Middle States. Address

THE WAUGH & SHAW PNEUMATIC TOOL CO.,
Denver, Colo.

FOR IMMEDIATE SHIPMENT.

Rolling Mill and Steel Works Machinery as Follows:

Bessemer Converter with bottoms, ladles and Morgan Hydraulic Ladle Crane.
35-in., 3 high Mackintosh-Hemphill Blooming Mill, with 30 x 36 inch Vertical Corliss Engine for driving same.
24-in., 3 high Mackintosh-Hemphill Billet Mill, both with Hydraulic Raising Tables and Manipulators.
Horizontal Billet Shear (Mackintosh-Hemphill make) with 14 x 18-in. Engine attached.
Several Hydraulic Cranes of various sizes.
One 10-ton Hand Crane.
Two 2-ton Hand Cranes.
Three Roll Lathes.
One Bar or Scrap Shear, with engine attached.
One 80 H. P. Locomotive Fire Box Boiler.
One 60-in. by 16 ft. Horizontal Tubular Boiler.

MACHINE TOOLS, &C.

One Engine Lathe, swings 60 in. by 18 ft. between centers, with extra live head for pit work.
One 24-in. Drill Press.
Double Emery Wheel Stand.
One 6-in. Gould Shaper.
One 18-in. by 6 ft. Lathe.
One No. 1 Garvin Hand Milling Machine.
Jig Saw, Shaper, or Edge Freezing Machine, Combination Saw, Boring Machines, Wood Turning Lathe, etc.
One 16-in. by 24 in. Standard Gauge Locomotive.
Five 3-foot gauge Locomotives.
One Steam Shovel.
A large stock of new and second-hand hoisting engines.

We manufacture grinding pans, shears, hoisting engines boilers and sheet iron work.

THOMAS CARLIN'S SONS,
ALLEGHENY, PA.

WANTED.

We wish to correspond with parties manufacturing machinery for making Shovels, such as Presses, Riveting and Polishing Machines. Address communications to

BEALL BROS., Alton, Ill.

FOR SALE.

Immediate shipment. Heating and Puddle Cinder and Finishing Roll Scale. Address

DIAMOND STATE IRON CO.,
Wilmington, Del.

FOR SALE CHEAP.

An up to-date Hardware Store. Good location, good schools and A1 farming country. Shipped 40,000 bales of cotton past year. For information address

"LOCK BOX A,"
Bryan, Texas.

Hardware Stock For Sale.

A clean and up-to-date stock in a town of 2500 inhabitants. County seat. Large amount of building both in town and country this year. Reason for selling poor health. Address

"C. F. B.," Box 461,
Hutchinson, Minn.

FOR SALE, or WOULD LET.

Manhattan Rolling Mill, fully equipped to make Horse Shoes, Horse Shoe Iron and Bar Iron, quite a good business established, been in operation over thirty years, retiring from business.

JOHN LEONARD,
Ave. A and 23d St., New York.

FLY WHEELS.

One 11 foot, in halves. 10 tons weight. One 8¼ foot solid, 1¾ tons weight. Both made by Providence Corliss Co.

MACHINE WORKS,
Passaic Ave. & New, Harrison, N. J.

FOR SALE.

The Somersworth Machine Co.

The extensive plant and business of The Somersworth Machine Company, located at Dover and Salmon Falls, N. H., is offered for sale.

The Dover plant is located sixty-eight (68) miles from Boston and forty-eight (48) miles from Portland, and consists of 19 buildings and 9 acres of land, situated alongside the tracks of the Boston & Maine R. R., from which a spur track runs to the loading and unloading points of the shops. The shops have a first class power plant of 80 H.-P., and the electric light, heating and sprinkling systems are complete.

The Foundry has two (2) large cupolas one 48 in. diameter and the other 60 in. diameter. It is built of brick, 200 by 50 ft. with monitor roof 33 ft. high. The core room is 40 x 40 ft. and the core sand room is 30 by 20 ft.

The Machine Shop is of brick, one story, with the monitor roof 26 ft. high, and is 270 by 70 ft., and is well equipped with machine tools and machinery for a job shop.

The John A. White Co. Machine Shop is of brick, one story, with monitor roof 25 ft. high, and 160 by 70 ft. In this department there has been manufactured wood working tools and machinery well known to the trade.

The Stove Works at Salmon Falls are situated on the Western and Northern divisions of the Boston & Maine R. R., and are 74 miles from Boston and 43 miles from Portland. The plant has been in operation since 1848, manufacturing heating and cooking stoves, furnaces, sinks, hollow ware and all castings pertaining to the trade, and has put upon the market over 60 different patterns of stoves and there are 100,000 in use in New England to-day.

The plant consists of 22 buildings, 40 acres of land and 8 tenement houses containing 14 tenements. Has an electric light system, and a nickel plating plant installed last year. The property is in excellent condition and has a well established and profitable business.

The above described plant of the Somersworth Machine Co., including the stock, patterns, machine tools and good will, will be sold as a whole or divided up as may seem desirable. For full particulars and descriptive list of the Real Estate, Machine Tools and Machinery and the manufactured product of the business, address the undersigned,

B. FRANK NEALLEY, Assignee, Dover, N. H.

WANTED.

1 Heavy Power Saw for cold iron.
1 Power Shear for cutting 4 in. bars.
1 Shaper, 24 inch.

Second-hand preferred. Must be modern tools and in good order.

The THOMAS LAUGHLIN COMPANY,
Portland, Maine.

For Sale, Cheap.

A new steam crane for standard gauge track, self propelling, capable of lifting easily ten tons at any point within a radius of 16 feet without the use of track clamps. Materials and workmanship first-class in every respect. Address

THE ALLENTOWN ROLLING MILLS,
Allentown, Pa.

FACTORY
FOR SALE OR RENT.

Almost new, three stories, 100 x 25 ft., with ell. Located on Railroad, one block from depot, Middletown, Conn. Engine, Boiler, Steam Heat, all in first-class order.

N. C. STILES, Watertown, N. Y.

TO CLOSE.

For sale complete or in part a fully equipped drop forge plant and machine shop, including a nickel plating outfit; Brown & Sharpe latest screw machine; Lodge & Barker engine lathe, nine foot bed twenty inch swing, cross feed and taper attachment; Eaton power press, planers, etc. All in good order. Power and rent low. Address

"H.,"
office of *The Iron Age*, 70 Kilby St., Boston, Mass.

TYPEWRITERS.

We will exchange typewriters, all guaranteed, and send subject to trial, in exchange for merchandise. What will you offer?

BROWNE & MANSFIELD, 245 Broadway, New York.

PITTSBURGH
SALES AGENCY.

J. H. HILLMAN & COMPANY, Managers.
No. 8 Wood St.,
Pittsburgh, Pa.

We have for sale at prices far below cost and real value—

Safe Works,
Malleable Iron Works,
Bessemer Steel Works,
Copper Rolling Mill,
Bar Mill,
Blast Furnaces,
Coal Lands,
Coal Mines,
Foundries, Machine Shops,
Stove Manufacturing Plant,
Tool Steel Mill,
Cold Rolled Steel Mill.

All kinds of machinery, new and second-hand, at very reasonable prices.

For Sale in Cleveland, Ohio.
AT ONCE.

Complete Specialty Stamping Works. 10 Presses, Lathes, Shaper, Drills, Shears, Line Shafting, Pulleys, Lighting Plant, Tools, Dies and other machinery, good will, Patents, etc. A chance of a lifetime. Will sell at a big bargain, as we are going out of business. Address

HERO STAMPING WORKS,
Room 407, Cuyahoga Bldg., Cleveland, O.

AGENCIES WANTED.

Well known first-class commission agents, established in Brussels, desire agency for articles likely to have market on the Continent. Engineering, electrical or hardware trade preferred. Best references. Apply to

"V. H. B., 1899,"
Care *The Iron Age*, New York.

NO. 32 CLIFF ST.,

four story brick building, to let from May 1; suitable for the iron business.
CHARLES S. BROWN, 59 Liberty St., N. Y.

MANUFACTURERS.
GLASGOW FIRM

is open to represent good makers Wire, Wire Nails, Machinery and other Hardware. Connection with best buyers.

Address, "M. M. N.,"
office of *The Iron Age*, New York

AN ENGLISH HOUSE

which could command a large trade is desirous of negotiating for American Agency for United Kingdom for manufacturers' Steel Plates, Angles and Shipbuilding material generally. To pass usual British tests. Apply in confidence "BOX 175/21," London. Office of *The Ironmonger*, 42 Cannon Street.

Locations for Industries.

The Chicago Milwaukee and St. Paul Railway Company has all its territory districted in relation to resources, adaptability and advantages for manufacturing, and seeks to secure manufacturing plants and industries where the command of raw material, markets and surroundings will ensure their permanent success.

A number of new factories and industries have been induced to locate—largely through the instrumentality of this company—at points along its lines.

The trend of manufacturing is Westward. Confidential inquiries are treated as such. The information furnished a particular industry is reliable.

Address

LUIS JACKSON,
Industrial Commissioner, C., M. & St. P. R'y,
Old Colony Building, Chicago, Ill.

LOUIS MESIER, Auctioneer.

Executor's Sale to Close an Estate
OF
Valuable Coal, Timber & Farming Lands
In Somerset County, Pa.
6,000 ACRES MORE OR LESS.
ADRIAN H. MULLER & SON

will sell at auction on

TUESDAY, APRIL 4th, 1899,

At 12 o'clock noon, at the N. Y. Real-Estate Salesroom, No. 111 Broadway, New York City.

This property is about 2¼ miles west of WEST SALISBURY STATION on the SALISBURY BRANCH, BALTIMORE AND OHIO R. R., which is a good shipping point; the Railroad having surveyed for an extension of their road to within ⅛ mile of these lands, makes it easy of access. The Mutual Telegraph Co. run over the lands around the public roads.

THESE LANDS are underlaid with BITUMINOUS COAL, FIRECLAY, IRON ORE and LIMESTONE, and have a fair average of the several kinds of Timber grown in this section, viz.: WHITE OAK, RED OAK, HEMLOCK, ROCK OAK, ASH, POPLAR, CHERRY, BLACK BIRCH, CHESTNUT, etc.

After the timber is cleared off, will make good farming and grazing lands, being well supplied with running streams.

THE ATTENTION OF COAL COS., IRON AND COAL MINERS, AND RAILROAD COS., ALSO CAPITALISTS, IS CALLED TO THE SALE OF THIS PROPERTY.

50 PER CENT. may remain on **BOND AND MORTGAGE** at 5 per cent. interest for One Year or all cash if desired. **Reports of E. V. D'Anvilliers, Geologist** and **Mining Engineer**, of **Philadelphia**, and other particulars can be had at the **Auctioneers'** office, **24 Pine Street, N. Y. City.**

For Sale.
Second-hand Open Side Extension Planer.

Intending to put a large planer in its place, we will sell our 48 in. high x 20 ft. long Open Side Extension Planer now running in works for $2500 f.o.b. Baltimore. It has four heads, two on the cross rail and one on each post. In good order; can be seen any day at our works.

The DETRICK & HARVEY MACHINE CO.,
Baltimore, Md.

WANTED.

Jobs and Specials for SPOT. Send particulars.

BROWNE & MANSFIELD,
245 Broadway, New York.

FOR SALE.

Quantity of old Machinery, Shafting, Pulleys, Cupolas, Converters, Oven Cars, Trucks, etc. For particulars address

AMERICAN STEEL CASTING CO.,
Chester, Pa.

FOR SALE.

An exceptional opportunity to buy a Hardware Stock of about $10,000.00, in a city of Massachusetts of over 84,000 inhabitants. Satisfactory reasons given for selling. Address

BIGELOW & DOWSE CO.,
Boston, Mass.

FOR SALE.

Seven Nail Machines of four different sizes and making all sizes of wire nail from 40-penny to smallest Only in use about six months. Address

SHELDON PARKS, Attorney,
Cleveland, Ohio.

FOR SALE.

To settle an estate, the Foundry known as The Oak Hill Manufacturing Co., with Patterns, Samples, Flasks, Machinery, &c., complete, for manufacturing Light Castings. Water Power and Steam. For particulars, inquire of

FRANK WHITCOMB, Administrator,
N. C. WHITCOMB ESTATE, Oak Hill, N. Y.

GIRDERS, COLUMNS, Etc., FOR SALE.

One water tank, 40 in. diameter, 26 ft. 0 in. long.
Twenty-six wrought iron riveted girders, single web, 12 in. wide, 23 in. deep, from 21 to 23 feet long, estimated safe load uniformly distributed, about 42 tons, average weight about 3000 lbs.
Twenty-six I-shaped cast iron columns, 9 in face, 15 in. deep, 18 ft. 3 in long, average weight 2600 lbs., designed to carry above girders
Twenty-six bottom bearing plates for same
The above columns and girders designed to carry overhead traveling crane
One single web steel girder, 13 in. x 40 in., 52 ft. 5 in. long, estimated weight about 11,000 lbs., estimated safe load uniformly distributed about 65 tons.
Twelve cast iron turn-tables for yard track, 5 ft. 7 in. diameter, 30¾ in. gauge, with cast iron pit linings and fittings complete

THE SNEAD & CO. IRON WORKS,
Louisville, Ky.

MACHINERY FOR SALE.

One Sturtevant horizontal engine 6 in. x 10 in.

One No. 2 Bliss punch.

One National bolt header and rivet making machine, will head bolts and rivets to 1 in. diameter.

One 400 lb. Morgan steam hammer, 5 in. cylinder, 16 in. stroke.

One 2¾ in. x 4 in. x 4½ in. Valley duplex steam pump.

One 4 in. x 6 in. x 4 in. Valley duplex steam pump.

One No. 5 Sturtevant blower.

One sprue cutter

One Pond steam separator, 5 in.

THE SNEAD & CO. IRON WORKS,
Louisville, Ky.

WANTED.

First-class boilers and blowing engine suitable for modern blast furnace. Address, giving full details and lowest price, "EMPIRE," care *The Iron Age*, New York.

HARDWARE.

Stock and Fixtures of a retail Hardware store for sale, located in Penna; stock invoices about $15,000. Sales last year $85,000. Present owner wishes to retire. Address

"RETAIL,"
Care *The Iron Age*, 117-119 So. 4th St., Phila.

HAND AND POWER CRANES FOR SALE.

One Yale & Towne power traveling crane 50 ft. span, 10 tons capacity, rope transmission
One Yale & Towne hand power crane, 32 ft. span, 2 tons capacity
One 5 ton steel jib crane, 25 ft swing.

THE SNEAD & CO IRON WORKS,
Louisville, Ky.

For Rent, with Heat and Power.

A three-story brick factory, 40 x 60, on side track. Light on all sides. Five railways and two rivers. Town of 15,000. Address

THE MARIETTA PAINT & COLOR CO.,
Marietta, Ohio.

Of Interest to Capitalists.

A competent mechanical engineer or machinery salesman with capital to take an interest in a live concern with a good line of standard tools who desire to add another large line. A splendid opportunity. Address

"STANDARD TOOLS,"
22 Pickering Bldg., Cincinnati, Ohio

Scrap Iron WANTED.

CASH PAID FOR

Wrought Scrap Iron, Cast Scrap Iron and Old Horse Shoes.

ADDRESS

D. M. OSBORNE & CO.

Manufacturers Farm Implements,

AUBURN, N. Y.

FOR SALE.

20 Hor Tubular Boilers, 60 in diam., 16 ft long
2 No. 9 Stillwell-Bierce Feed Water Heater.
1 Burgawanth Feed Water Heater and Purifier
1 Iron Building, 40 ft x 100 ft
1 " " 40 ft x 113 ft

W. J. CARLIN,
380 So. Highland Ave., Pittsburgh

FOR SALE.

A valuable Manufacturing Plant. The building is 40 x 100 feet, two stories. Good Engine and Boiler and well equiped with valuable machinery and tools for manufacturing Vapor Stoves or other Iron products.

Satisfactory reason for selling.

Address A. MUNSON, MEDINA, OHIO.

Henry A. Hitner's Sons,

Wholesale Scrap Iron & Metal Dealers, Riggers and Wreckers.

We are always in the market to buy and dismantle Iron Buildings, Bridges, Abandoned Railroads, Rolling Mills, Blast Furnaces, Ruins of Fires and all Structures of this character.

Gaul & Sergeant Sts., - Philadelphia, Pa.

2D-HAND BERRYMAN HEATERS,

all sizes. Taken in trade for our improved Berryman. In perfect order. Tested and guaranteed. Prices reasonable. BENJ. F. KELLEY & SON, Makers, 91 Liberty St., New York.

EUGENE V. N. BISSELL, Auctioneers.

E. BISSELL & CO.,

Successors to
HAYDOCK & BISSELL,
WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

PHILADELPHIA SALES AGENCY.

FITCHBURG MACHINE WORKS,
P. BLAISDELL & CO.
BRADFORD MILL CO.
BICKFORD DRILL & TOOL CO.
CINCINNATI MILLING MACHINE CO.
RELIANCE MACHINE & TOOL CO.
Large stock always on hand.
☞ Send for list of Second-Hand Machinery.

JOHN E. HOLMES & CO.,
612 Arch St., Philadelphia.

FOR SALE.

Gould Planer, 17 in. x 6 ft.
Prentiss Lathe, 15 x 60 in.
Leeds Gap Lathe, 36 in. x 14 ft.

Old material of all kinds bought and sold.

WALSH'S SONS & CO.,
Newark, N. J.

Scrap Iron, Steel & Metals

New Jersey Iron & Metal Co.,

PATERSON, N. J.

Write us when you have scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,
10th Ave. and 15th Street,
New York City.

Telephone Call, 897 18th St.

JOHN LEONARD. MICHAEL BLAKE.

JOHN LEONARD & CO.,

IRON AND STEEL SCRAP,
IRON AND STEEL RAILS, PIG IRON, ETC.
220 BROADWAY,
ST. PAUL BUILDING, NEW YORK.
TELEPHONE, 975 CORTLAND.

Correspondence solicited.

Morton B. Smith,

243 FRONT ST., NEW YORK,

OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

In car load lots.

Correspondence solicited.

For Sale,—Relaying Steel Rails.

5,000 Tons, 56 and 60 lb. first-class Steel T Rails, with splice bars.
800 Tons 48 lb. first-class Relaying Steel T Rails, with splices.
150 Tons 35 lb. Relaying Steel T Rails, in first-class condition, with splices, at Kansas City, Mo.
300 Tons first-class Relaying 60 lb. Steel T Rails, with splices, at Birmingham, Ala.

BLOCK-POLLAK IRON CO.,
922, 923 and 924 Marquette Bldg., Chicago, Ills

FOR SALE.

STEEL RE-LAYING RAILS.

5000 tons original section, 60 lbs. per yard, first-class relaying steel Rails, with splices.
800 tons original section 50 lbs. per yard, first-class relaying steel Rails, with splices.
Delivery on roads running through Indiana, Illinois, Kentucky and Ohio. Low rates can be secured to any Mississippi River points.

THE ISAAC JOSEPH IRON CO.,
9-15 Swift Building, Cincinnati, O.

SCRAP IRON WANTED.

We pay cash for Wrought Scrap, or exchange for Refined Bar Iron.

THE JANSON IRON COMPANY,
Rolling Mill and Office, Columbia, Pa.

Relaying Rails For Sale

300 tons 56's.
70 " 60's.
75 " 50's.
50 " 72's.

WM. H. PERRY CO.,
Providence, R. I.

WANTED.

SCRAP IRON and STEEL.

Correspondence Solicited.

Robert Grant & Co

253 BROADWAY, N. Y.

WANTED.

Scrap Iron and Steel.

Correspondence Solicited.

C. BOTJER, 405 Newark St., Hoboken, N. J.

FOR SALE.

A well equipped and desirable machine shop and foundry, adapted to all kinds of work and located in the oil and gas field at Fostoria, O., which has excellent railroad facilities. Call on or address THE BRASS & IRON WORKS CO., Fostoria, O.; S. D. CARR, Toledo, O., or S. S. WHEELER, Lima, O.

FOR SALE.

Double Frame **Steam Hammer,** built by Wm. Sellers & Co., Philadelphia, Pa. Weight 30 tons. Address

F. E. RAINIER, 63 So. Canal St., Chicago.

Gentleman,

well known in London, now representing Sheffield firm of manufacturers, is open to take up agency or direct representation of engineering company. Write "G. W. 150," care of Messrs. Deacon's Advertising Offices, 154 Leadenhall Street, London, England.

FOUNDRY and MACHINE SHOP FOR SALE.

Brick 40 x 100 ft. 10 ton melting furnace. Machine Shop 30 x 200 ft. 125 horse power engine and boiler, built in 1892. Large spring water supply with 60 ft. fall to works. On E. R. track. 2½ acres of land.

O. F. FRAZER, Rec.,
Chagrin Falls, Ohio.

WE DESIRE

to solicit orders for reliable house on commission. Specialties preferred.

MARSHALL & HENRY, Mfrs.' Agents,
2654 Lafayette Ave., St. Louis, Mo.

Help Wanted.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

TRAVELING SALESMAN in New England and Middle States to carry a side line of beautiful goods on commission for manufacturer of highest standing; one who is acquainted with saws and kindred lines; must be of highest character and have best connections. Address "Commercial," care *The Iron Age*, New York.

TRAVELING SALESMAN or AGENT for Canada by a steel firm; must be well acquainted with consumers of steel throughout the provinces of Quebec and Ontario. Address "Steel," care *The Iron Age*, New York.

DRAFTSMAN and assistant to rolling mill and open hearth superintendent. Write, giving qualifications and salary wanted, to "Maryland," care *The Iron Age*, New York.

SUPERINTENDENT of steel mill, including plow and bar mills, open hearth furnace, crucible furnace, forge and machine shop and foundry. Address "Crown," care *The Iron Age*, New York.

IRON FOUNDRY FOREMAN; engine and machinery castings; state age, wages, reference and full particulars. Address Robt. Wetherill & Co., Chester, Pa.

MECHANICAL DRAFTSMAN; one who has had experience in rolling mill machinery; state experience and salary required. Address "M. D., 330," care *The Iron Age*, New York.

MELTER and experienced man to take charge of air furnaces in one of the largest malleable casting plants in the West. Address "Malleable C.," care *The Iron Age*, New York.

FOREMAN for boiler shop; an experienced man who is not afraid of work, habits temperate and who will have the interest of the concern at heart. Address "Boilers," care *The Iron Age*, New York.

MASTER MECHANIC, with experience in rail mill and Bessemer work; write, stating experience and salary expected. Address "Rail Mill," care *The Iron Age*, New York.

A live, energetic, hustling, ambitious BRASS MOLDER to take charge of shop; must have a thorough knowledge of up to date methods used in brass foundry; young man preferred; excellent opportunity for advancement; state experience; give reference and salary expected. Address "Ambition," care *The Iron Age*, New York.

Several first class MACHINE PATTERN MAKERS; also one first class STOVE PATTERN MAKER; steady work given to good men. Address Remmers Pattern Company, 422 North Main street, St. Louis, Mo.

Competent man to take interest and management manufacturers' agency; leading Southern city; good line accounts; large territory; excellent opportunity; state references, experience, &c. Address "Agency," care *The Iron Age*, New York.

Practical man to take the general management and look after the details of a sash lock on a new principle, now being manufactured and sold; party with some capital that is willing to take an interest in the business preferred. Address "Ewart," 71 Carew Building, Cincinnati, Ohio.

A first-class MECHANICAL SUPERINTENDENT; must be a good practical mechanic and prepared to locate in the South; reply, stating previous experience; none but the very best need answer. Address "Mill Work," care *The Iron Age*, New York.

Experienced HARDWARE CLERK; references required; location of business, central part of New York State. Address "C. W., No. 323," care *The Iron Age*, New York.

CHEMIST; one having had some experience in car wheel work; state age, experience and salary expected. Address "Car Wheels," care *The Iron Age*, New York.

By large machine works in Germany, a thoroughly competent DESIGNER of large lathes, planers and large boring mills; applicants must be well acquainted with best American practice and must also be posted on the operation of these machines; knowledge of German not essential; give full particulars as to experience, age and salary expected. Address "Lathe Designer," care *The Iron Age*, New York.

Situations Wanted

Undisplayed Advertisements for Situations Wanted not exceeding twenty-five words Fifty cents each insertion. Additional words two cents each.

MANAGER.—A gentleman with extensive experience in building and managing steel works and rolling mills, and in selling their product, wishes to associate himself with a large company in the capacity of local sales agent in some good territory; is a graduate engineer, member of principal engineering societies and has a large business acquaintance; at present holds a good position, but is looking about for something better; best of references; correspondence confidential. Address "J. P. A.," care *The Iron Age*, New York.

A metallurgical engineer of 20 years' experience in building and operating steel works, rolling mills, &c., graduate of technical school, wants a position as CHIEF ENGINEER, SUPERINTENDENT or ASSISTANT with some large, up to date concern; well acquainted with modern design and practice in this country and abroad, and can furnish best of references; now holding excellent position, but wishes to make a change for good reasons. Address in confidence "S. R. B.," care *The Iron Age*, New York.

Civil engineer, graduate of leading school, with 20 years' experience as ENGINEER and SUPERINTENDENT with several large companies, familiar with designing, estimating and execution of work, desires a responsible position; has occupied position with present employer for past ten years, but wishes to make a change which will be in the direction of advancement. For reference and further information address "M. T. S.," care *The Iron Age*, New York.

PURCHASING AGENT of a large machinery manufacturing corporation wishes to connect himself with some good concern in a similar capacity or as a resident buyer for some out of town firms; he has had a wide and valuable experience in buying, and the management of the corporation with which he is now connected will cheerfully testify to his excellent reputation for integrity and close buying. Address "Purchasing Agent," care *The Iron Age*, New York.

A position as SALESMAN by an experienced hardware and supply man; am well acquainted with the hardware trade of Indiana; salary or commission. Address "J. C. J.," care *The Iron Age*, New York.

Advertiser, possessing considerable experience and connection with the British and Colonial iron and hardware trade, is returning to England and will be glad to enter into communication with manufacturers and exporters desirous to cultivate such business. Answer "No. 25," care *The Iron Age*, Pittsburgh, Pa.

To correspond with manufacturers of hardware, supplies, machinery, &c., who are not represented in Indiana in regard to handling their goods on commission. Address J. C. Jamieson, manufacturers' agent, Room 3, Shirk Building, Peru, Ind.

Young man, practical, experienced on repairs of building iron working machinery, pipe fitting, jib square shaft or electric traveling cranes, or to erect machinery of almost any kind; best of references. Address "M.," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

Erecting machinery, boilers or structural iron work; salary or contract; best references. Address "Williams," 347 East Forty-fourth street, New York.

BUSINESS, SALES or ADVERTISING MANAGER by one who has had 16 years' business experience; have filled every position from office boy to proprietor; thorough knowledge of bookkeeping, general business methods and sales or advertising department organization; have served both advertiser and publisher; experience as salesman and in handling salesmen; I know how to get maximum results. Address "Permanent," care *The Iron Age*, New York.

MECHANICAL ENGINEER, CONSTRUCTOR, DRAFTSMAN, MASTER MECHANIC, CALCULATOR; used to solving mechanical problems; expert organizer of rapid production; moderate terms; references. Address 135 Nevins street, Brooklyn, N. Y.

As ROLL TURNER; turn all kinds of plain and shape work; experience; steady and reliable; best of reference; wages moderate. Address "Turner," care *The Iron Age*, New York.

As SUPERINTENDENT of a malleable iron works; have had a large practical experience. Address "F. L. B.," care *The Iron Age*, New York.

MODELER; first-class man for small work especially; good reference; position in city or country desired. Address "Modeler," care *The Iron Age*, New York.

BRASS AND COPPER.

An experienced salesman wants to make a change. Will sell on either salary or commission, or will assume entire charge of the erection and operation of a small rolling mill for parties wishing to engage in manufacturing.

"CAPABLE 330,"
care *The Iron Age*, New York.

SCIENTIFIC BLAST FURNACE MANAGER of 12 years' experience, North or South, who can give some of the leading iron men in the country as references, is open for an engagement. Address "Blast Furnace, No. 323," care *The Iron Age*, New York.

OPEN HEARTH MELTER; strictly temperate; best of references. Address "O. H. Melter," care *The Iron Age*, Hamilton Building, Pittsburgh, Pa.

WANTED

As FACTORY SUPERINTENDENT by man 35 years of age; practical tool maker; have had ten years' experience as superintendent of manufacturing concerns; capable of putting a plant on paying basis; at present employed by one of the leading concerns in their line; can furnish best of references for the past ten years; none but first-class companies need apply. Address "I. S., 323," care *The Iron Age*, New York.

As SUPERINTENDENT of foundry and machine company by a thoroughly practical man; is competent to make estimates on castings or take charge of office, and travel if necessary. Address "B. E. A.," care *The Iron Age*, New York.

A young man of good habits and ability as ROLL TURNER; any firm who wish a man that they can depend on, will please address "S. S. W.," care *The Iron Age*, New York.

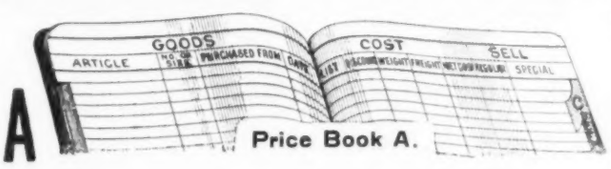
By a practical expert as SUPERINTENDENT or FOREMAN of sewing machine, typewriter, bicycle or such manufacturing concern; experienced in charge of men; am a practical mechanic and capable of designing tools, jigs and labor saving devices. "Expert," care *The Iron Age*, New York.

Young man, number years' experience in machine shops, &c., desires situation; good manager of help. Address "M. W. C.," P. O. Box 1429, Boston, Mass.

THE IRON AGE
HARDWARE PRICE BOOKS.

Arranged by R. R. WILLIAMS, Hardware Editor of The Iron Age.

These Price Books are made in a variety of sizes and styles adapted to pocket, store or desk use, and are specially arranged to meet the requirements of the Hardware and Metal trades. They are printed on paper of superior quality and bound in grain seal leather.



Columns are provided for the name and number or size of goods, for noting from whom purchased, date of quotation or purchase, list and discount, and for entering freight expenses. Under the heading of selling prices, the regular and any special price or remarks in regard to the goods are given place. ***Size of page, 4 x 7 inches.***

FOUR EDITIONS:

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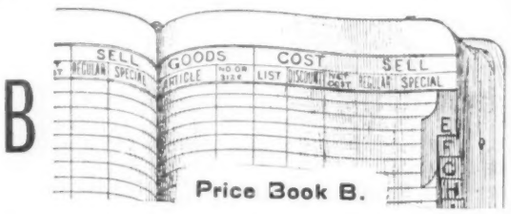

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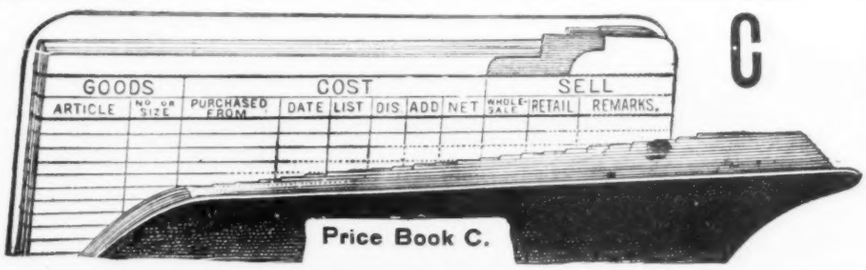

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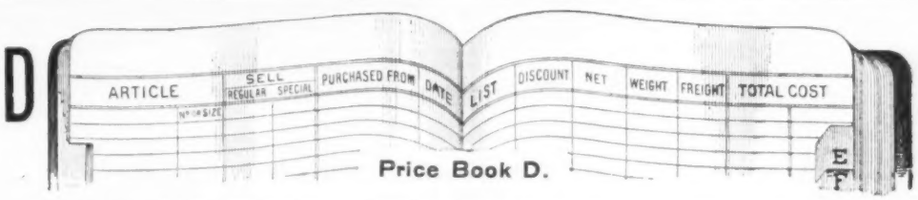

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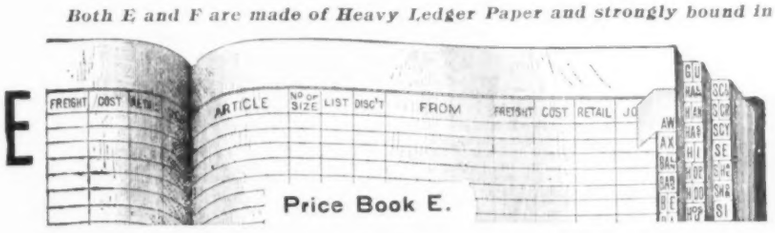

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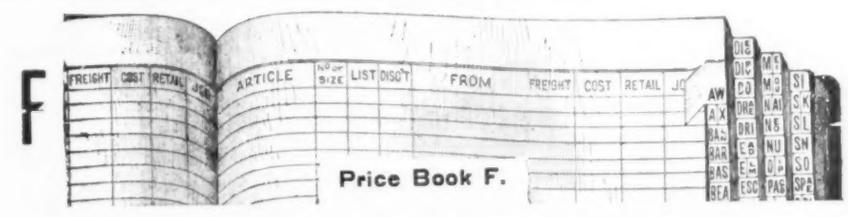

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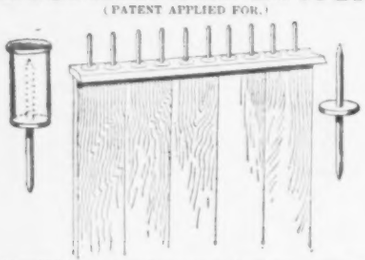

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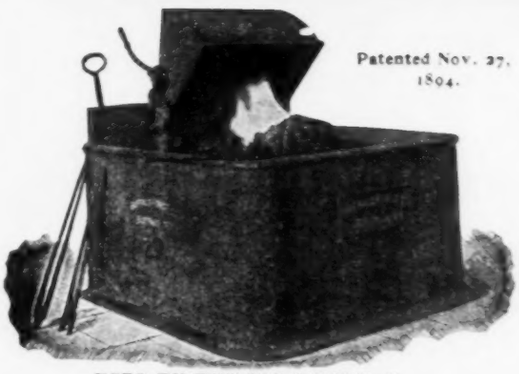

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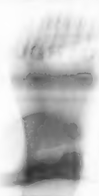

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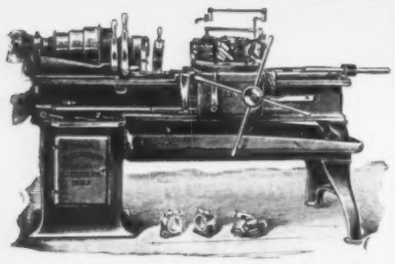

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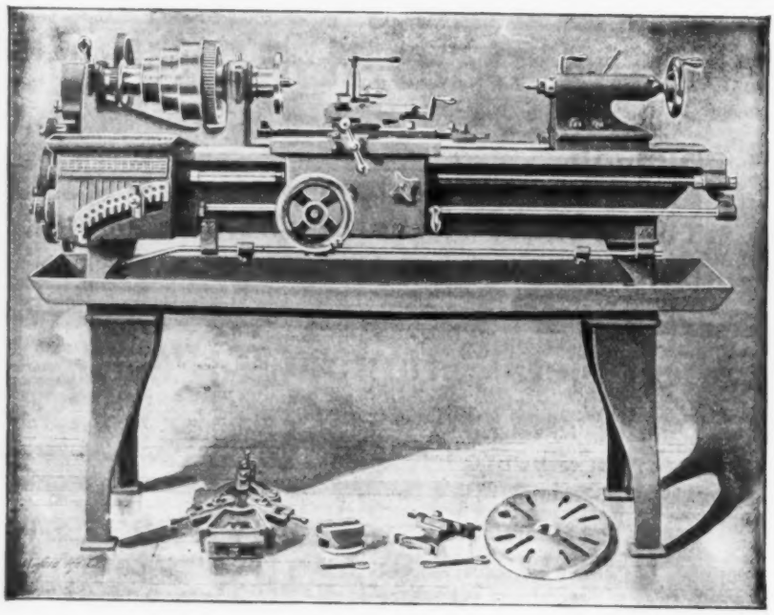

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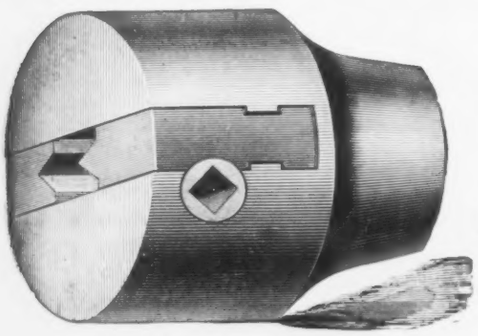

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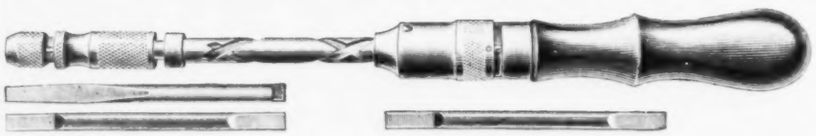

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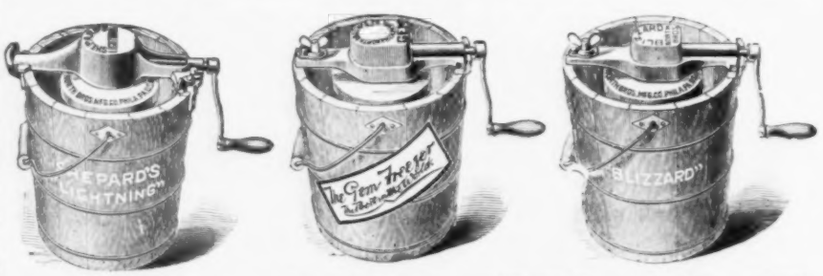

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The Donoghue Soldering Copper Handle is a good Handle. **TESTED TEN YEARS.**
Made by The Cleveland Rule & Handle Co.,
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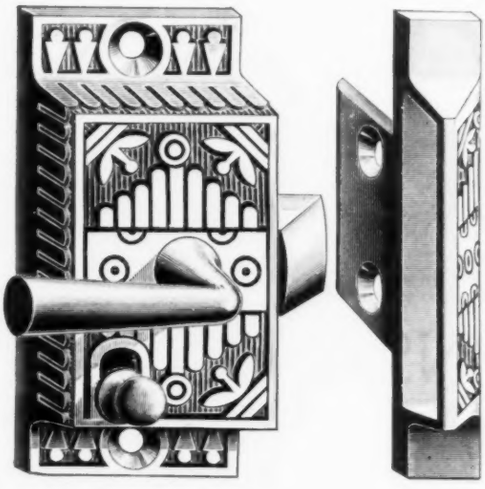

SCREEN HARDWARE.

Our line embraces everything for trimming Window Screens and Screen Doors properly.

Let us quote you prices for the coming season.

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Switch Broom

for cleaning from Street and Railway curves, ice, snow and dirt. Handle 38 in. long with steel scraper end. Handle riveted to brush. Strongly made of extra heavy wire set in V shape.

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for Steam and Street Rail way track sweeping. Made of extra heavy flat steel wire.

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Clark Expansive

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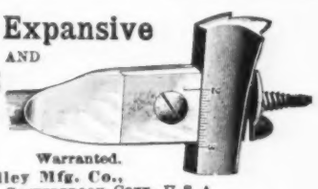

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SCALES,

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FOSTER BROS. CO., Butchers' Knives and Tools.
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"THE STANDARD" SCALES,

For Railroads, Mines, Mills, Warehouses and All Purposes.

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MANUFACTURERS, Pittsburgh, Pa.

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We are sole makers of the West Lock Faucet and ask you to send for our Prices and Catalogue.

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Cable Address—Blocks, Boston.

THE ORATOR and IMPROVED HUNNINGS

solid back dust transmitters in Wall, Desk and Cabinet Styles.

They are **Convenient, Durable** and the **best** of **talkers.**

A trial will convince anyone of their superiority on either **short** or **long** distance work.

Anyone can make an instrument that will work well at first, but to produce one that will **continue** to meet every proper demand is quite another problem.

The Orator will.

Manufactured by

THE RAWSON ELECTRIC CO.

ELYRIA, O., U. S. A

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ATKINS SEGMENT GROUND.

The Standard of the World.

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Branches—Memphis, Tenn.
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Will advertise you and your wares.

The Simonds Cross-Cut Saw (CRESCENT GROUND)

Never fails to please.

To be obtained of Jobbers throughout the country—and from any of our Houses.

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SIMONDS MFG. CO., Ltd.,
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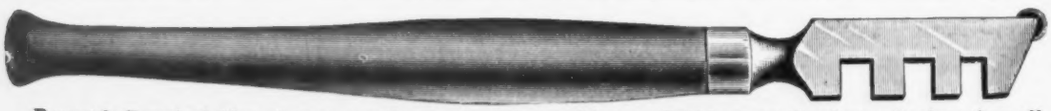

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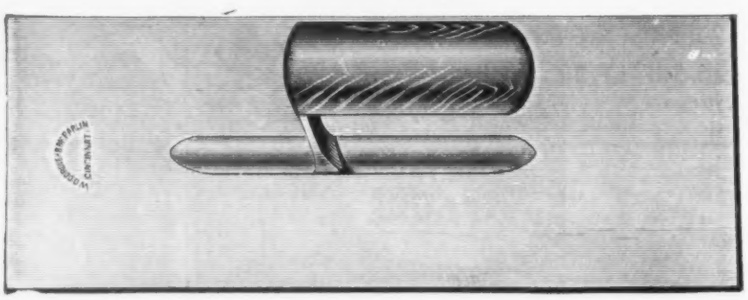
Barrett's Practical Glass Cutters are the standard the world over. Sold by more Hardware Dealers than all other makes combined. Send for prices and sample. W. L. BARRETT, Manufacturer, Bristol, Conn., U. S. A.

"There Are Others,"

But not the Genuine, ALL Imitations.



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WOODROUGH & McPARLIN (CINCINNATI) PLASTERING TROWEL

—IS MFD. BY—

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MANUFACTURERS OF

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SUPERIOR QUALITY and UNSURPASSED WORKMANSHIP.

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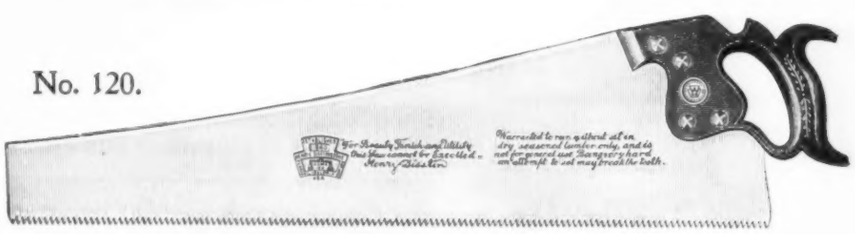
Our Newest Production of High Grade Hand Saws. A Perfectly Proportioned, Beautifully Finished Tool.

No. 120.

Specially made to work without Set. For Smooth Cutting in Dry Lumber.



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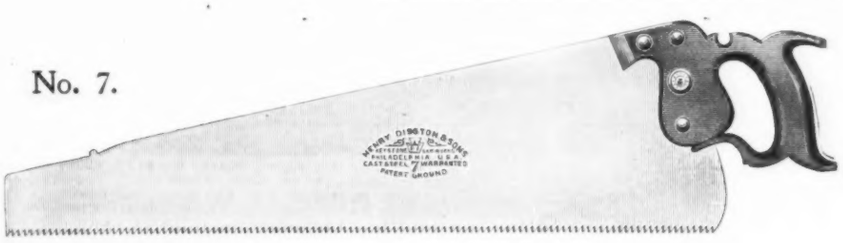
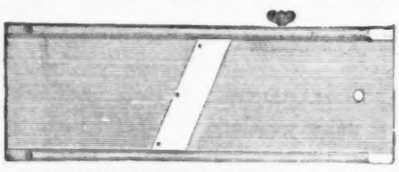


The Saw on which Henry Disston built up his reputation. Equal in quality to any saw not stamped "Disston."

BUTCHER SAWS,
ALL STYLES.

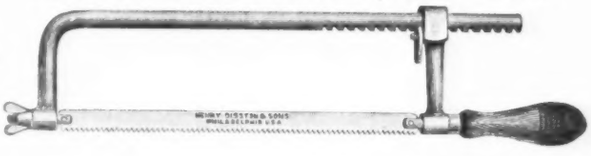
SLAW AND CROUT CUTTERS.



Made from Well Seasoned Cherry Lumber, Hardened and Tempered Cast-Steel Blades.

SEE OUR NEW ADJUSTABLE CROUT CUTTERS.

DISSTON ADJUSTABLE HACK SAWS



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THE MOST DURABLE FILES ON THE MARKET.

"VIM" Champion Tooth Saw, High Grade Steel, Taper Ground.

WE MANUFACTURE THE LARGEST LINE OF SAWS IN THE WORLD.

Take Your Choice

There are two lines of bicycles that hardware dealers can handle.

SELLERS AND STICKERS.

A bicycle manufacturer may and may not have a line that goes with a hardware dealer, a jobber picks from the whole lot the goods that he offers with the wants of the hardware dealer in view. From the many good agencies established and from the very many testimonials we have we must feel that we have been successful in our selections.

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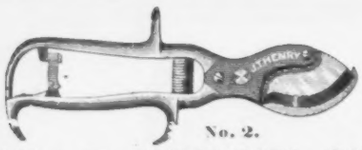

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Cutlers to the American Butchers.

THE BEST
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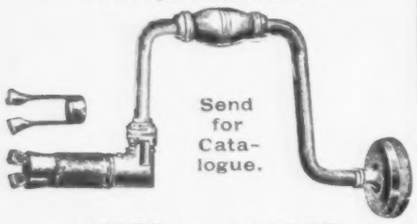
NEVER SLIP
W. C. LADD, Maker, Bristol, Conn
WRITE FOR PRICES.

PLAIN AND RATCHET BIT BRACES.
The largest line made in U. S.



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Send for 64 page Catalogue of Sharpening Stones for all Purposes.

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When using "KEEN" Shakspeare Razor. Retails for $1.50, $2.00, and *Special Ground*, $2.50. SOLE AGENTS FOR
Geo. Butler & Co., Sheffield, England.
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Why is C. E. JENNINGS' NEW AUGER BIT NO. 1¼ the Best Bit for Wood Boring in the World? Because

IT BORES EQUALLY WELL IN HARD OR SOFT WOOD, CROSS GRAIN OR END BORING.....

We have combined two principles in one, and think we have solved the problem of making a bit that is suitable for all around use. Price-lists and samples furnished on application.

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MANUFACTURERS OF
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Of all sizes, complete with tools, for Hardware, Toy Notion and Variety trades.
Factory and Salesroom,
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Also Machinists' Tool Chests, empty. Tool Cabinets and Work Benches. Illustrated Catalogue and prices furnished on application.

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WIRE FLY KILLER.

Retails for 10 cents. **J. F. BIGELOW,**
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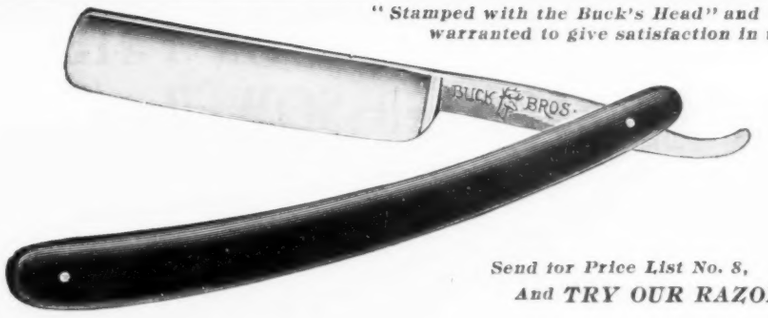
"Stamped with the Buck's Head" and warranted to give satisfaction in use.



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HIGHEST AWARD PARIS EXPOSITION, 1889.

ESTABLISHED 1867. INCORPORATED 1892.

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BUFFALO, N. Y. Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.

ESTABLISHED 1825. ESTABLISHED 1825.

IMPORTANT DECISION RELATING TO THE

HEINISCH

TRADE-NAME ON SHEARS, TRIMMERS, &C.

The U. S. Circuit Court, Southern District of New York, Judge Townsend, has rendered a decision in the suit of "R. Heinisch's Sons Co. vs. Hermann Boker & Co."

"The Complainant is entitled to an accounting, and to an injunction restraining them from using the names 'Heinisch' or 'H. C. Heinisch' on its Shears, Labels, etc., and otherwise, in any way which will interfere with Complainant's enjoyment of the benefits of its Trade-name."

Referring to the above decision we would respectfully state our determination to protect our rights in the premises and warn all persons against any imitation of our Trade-name.

R. HEINISCH'S SONS CO.,

N. Y. OFFICE, 90 Chambers St. NEWARK, N. J.

NOT CONNECTED WITH ANY SHEAR COMBINATION.

Charles Buck, Millbury, Mass., U. S. A.

MILLBURY EDGE TOOL WORKS.

I MAKE A SPECIALTY OF CARVING TOOLS.

CHISELS,
GOUGES,
CUT and DOUBLE IRONS,
SCREW DRIVER BITS,
REAMERS,
CUPPED NAIL SETS, ETC.

Also a Full Line of RAZORS,

Hand Forged, Hand Ground, made of Best English Steel, branded *CHARLES BUCK*. All Goods Fully Warranted.

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The BEST Pocket Cutlery on the Market To-Day, WE MAKE.

ONLY THE BEST MATERIAL is used and skilled workmen are employed.

WE ASK YOUR PATRONAGE.

Each and every knife is tested before it leaves the factory and we *Warrant them all.*

We make over 300 different styles.

Cattaraugus Cutlery Co.,

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THE CELEBRATED

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MANUFACTURED ONLY BY

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Manufacturers of full line of Solid Steel Pliers, Cutters, etc.; large line of Shears, Nail Pullers, Ticket Punches, etc., also specialties in Sheet Metal or Drop Forgings to order.

The "ORIGINAL JENNINGS" AUGERS and AUGER BITS.

Genuine have "Russell Jennings" stamped in full on the Round of each Bit.

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HIGH GRADE AUGER BITS.

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SECOND TO NONE.

Prices Right.

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BIG SELLERS!

ROOT'S COBBLERS' OUTFITS

are needed in every family.

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on *our full line*; also on Iron Lasts and Stands, Lap Lasts, Shoehammers, Shoefindings and "Plymouth Rock" Halfsoles.

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Ship Augers and Car Bits.
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PEARCE'S IMPROVED CAHOON PATENT BROADCAST SEED SOWER

Is as much superior to any other device for sowing grain as the modern electric light is better than a tallow candle. The CAHOON is not the lowest price seed sower, but taking into consideration the durability of the machine, the ease with which it is operated, and the quality of its work, it is the cheapest. Pays for itself every day that it is used. Sows all kinds of grain and cleaned grass seed; does five times as much work as can be done by hand with two-thirds the amount of seed, and does it better than it can be done in any other way.

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Retail dealers supplied at factory prices promptly by our wholesale agents at all principal distributing points.

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The '98 Chicago Clipper Retails For $8.75.

HARDWAREMEN—DO NOT ORDER

another old-fashioned, out of date two-hand horse clipper. Be enterprising and order the '98 CHICAGO CLIPPER. The greatest clipping machine ever invented; holds the world's record for fast clipping; time 14 minutes. You can sell one of these machines to every man who used to buy the old fashioned two-hand variety. Ask your jobber about them or send to us direct.

HAIR CLIPPERS.

If you want a clipper "with a reputation" insist on the "Stewart Patent." There is no other "just as good" and they will cost you no more than the inferior kind.

We have just been awarded Gold Medal at Trans-Mississippi Exposition, highest and only award for horse clipping, sheep shearing and cattle grooming machines.

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STEEL WIRE CHAINS.

We manufacture three types of Steel Wire Chains in various sizes which we can furnish plated, tinned, galvanized or japanned Also made into Halter Chains, Traces, Kennel Chains, Dog Leads, Tieouts, Cow Ties, etc , etc. Our Plumbers' and Sash Chains are First Quality.

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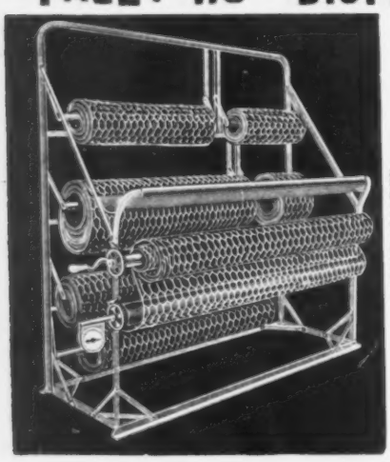
"TALLY-HO" DISPLAY RACK AND MEASURING MACHINE



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Arranged for conveniently measuring, winding and handling POULTRY NETTING

The MEASURING AND HANDLING OF POULTRY NETTING has been a most trying and vexatious problem. The "TALLY-HO" has solved the long vexing question of how to measure the stubborn stuff. It is needless to enter into the details of all the disagreeable annoyances attending the retailing of an article that is growing in demand each year. You know what they are, and a description of the machine will show you that they are all overcome and that the selling of any number of feet, of any width, can be done in a few minutes by one person with pleasure instead of trial and trouble.

The machine is made of GALVANIZED IRON, occupies only 28 INCHES by 80 INCHES floor space and is 70 INCHES HIGH, and holds one bale each 12, 24, 36, 48, 60 and 72 inch netting.

ITS CONSTRUCTION is on STRICT MECHANICAL PRINCIPLES, and with ordinary usage it WILL LAST A LIFE TIME.

It winds the netting compactly while measuring, and the rolls are easily tied and ready for delivery.

It provides a place where netting is always in view, and makes a display of what under the old way is a ragged looking lot of cut pieces always in the way.

It saves much waste in taking care of small pieces. It saves time and the annoyance of carrying the bales out to the street to cut and measure.

IT IS GUARANTEED to do the work claimed for it and embodies every need for rapid and easy handling of poultry netting.

These are facts that will merit and command your attention.

Price, F. O. B., Batavia, Ill., $20.00. **Discount.....**

For sale by all the leading wholesale Hardware Dealers.

MATTHEW BURTON, Manufacturer,
BATAVIA ILL.

AN ESTABLISHED SUCCESS.

TRADE MARK:

ROGERS

"Anchor" Brand Silver-Plated Ware

bearing the above imprint. Its universal reputation creates a great trade for it wherever there's a demand for the best. It can't be recommended too highly. Made only by us

WM. ROGERS MFG. CO., Hartford, Conn.

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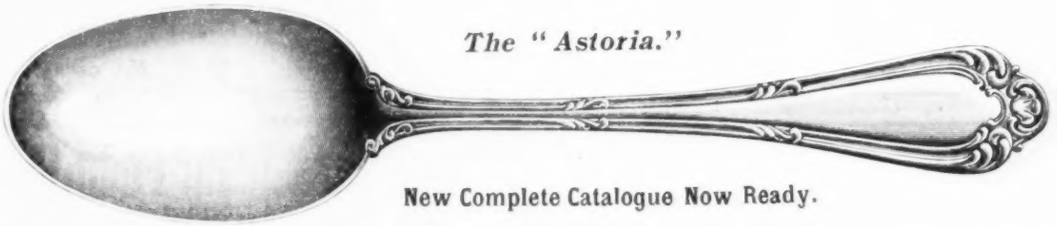
SILVER PLATED FLAT WARE. "1835-R. WALLACE." Superior in Design and Finish.

The "Astoria."



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Factories, WALLINGFORD, CONN.

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McIntyre's

Dry Battery Portable Electric Safety Lamp...

This is an Electric Lamp set in a White Enamel Parabolic Reflector, and can be attached to the cap or any part of the clothing by means of a stick-pin attached to reflector and connected to the battery with a flexible cord. The battery is arranged to be carried on a belt or in the pocket. So the user has free use of hands. The current can be turned off when not in use. Dry batteries are used and can be recharged from direct Incandescent Electric Current Charger and full directions go with each Lamp.

IS USED BY THE FOLLOWING: For Watchmen, Miners, Mine and Gas Inspectors, Boiler Shops, Oil and Gas Works and Gas Fitters, City Sewer and Underground Cable Inspectors; Powder Mills and Warehouses where explosive materials are manufactured and stored; exploring cellars and trenches where leaks occur, and investigating pipe connections where it is impossible to carry an oil lamp or candle for fear of explosion—and all parties requiring a safe portable light. The whole outfit is neat and compact.

No. 1 weighs 2 lbs., 1½ C. P. Price complete, $4.00. For Meter Reading Only.

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No. 3 weighs 12 lbs., 10 C. P. Price complete, $12.00. For Several Persons to Work By.

Manufactured by...

ELMER E. McINTYRE, Pittsburg, Pa., U. S. A.

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CINCINNATI PLASTERING TROWEL

HAND MADE

Plasterers' Trowels, Butchers' Knives, Meat Saws, Hand Saws of Every Description

Write for Catalogue of Complete Line

GEO. H. BISHOP & CO.

Lawrenceburg, Ind. Cincinnati, Ohio.

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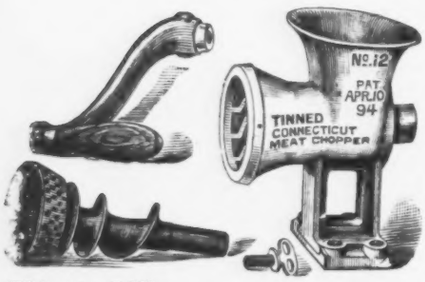
Salaried Eastern and Export Representatives

CONNECTICUT MEAT CHOPPERS.

"ONLY TWO PARTS TO CLEAN."



No. 0, Chops 1½ pounds per minute, · $1.75
No. 1, Chops 2 pounds per minute, · 2.25
No. 8, Chops 3 pounds per minute, · 3.00
No. 10, Chops 3 pounds per minute, · 3.00
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No. 10 and 12 are especially adapted for Butchers.
No. 10 fastens to the table, same as No. 12.

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Creasey Ice Breakers.

MACHINES
FOR REDUCING
CAKES OF ICE

To the proper size for use in Ice Cream Freezers—for packing, keeping and shipping Game, Poultry, Fish, Oysters, Milk, Cream, etc.,—for ice water pitchers—cracked ice for table use, wine coolers, etc.

WELL MADE—
EASY RUNNING—
DURABLE.

Over 2,500 of the larger sizes in use.

Prices $5.00 to $100.00.

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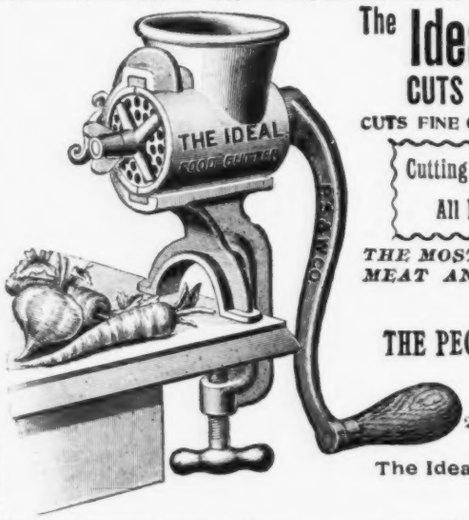

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CUTS EVERYTHING EDIBLE.

CUTS FINE OR COARSE JUST AS NEEDED.

Cutting Parts are of Tempered Steel.
All Parts can be Duplicated.

THE MOST SATISFACTORY FAMILY MEAT AND FOOD CUTTER EVER MADE.

MANUFACTURED BY
THE PECK, STOW & WILCOX CO.,
SOUTHINGTON, CONN.,
and
27 Murray St., - NEW YORK.

The Ideal Receipt Book Free upon Application.

CLAD'S Ice Cream Disher.

Seamless drawn steel cups.
German silver knives (not tin).
Improved key fastening, will not get loose.
Improved handle.
Capacities guaranteed standard.

PRICES ON APPLICATION.

Address the original manufacturers.....

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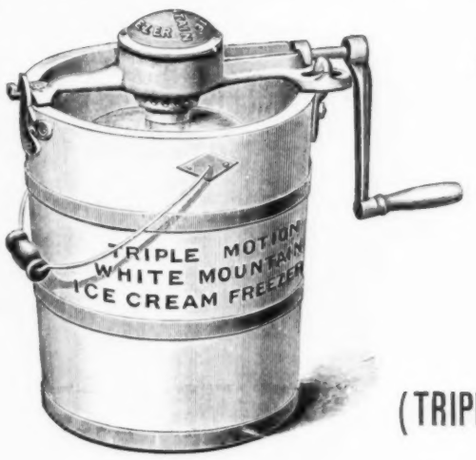

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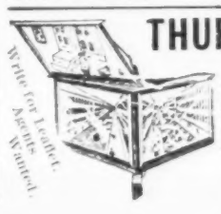

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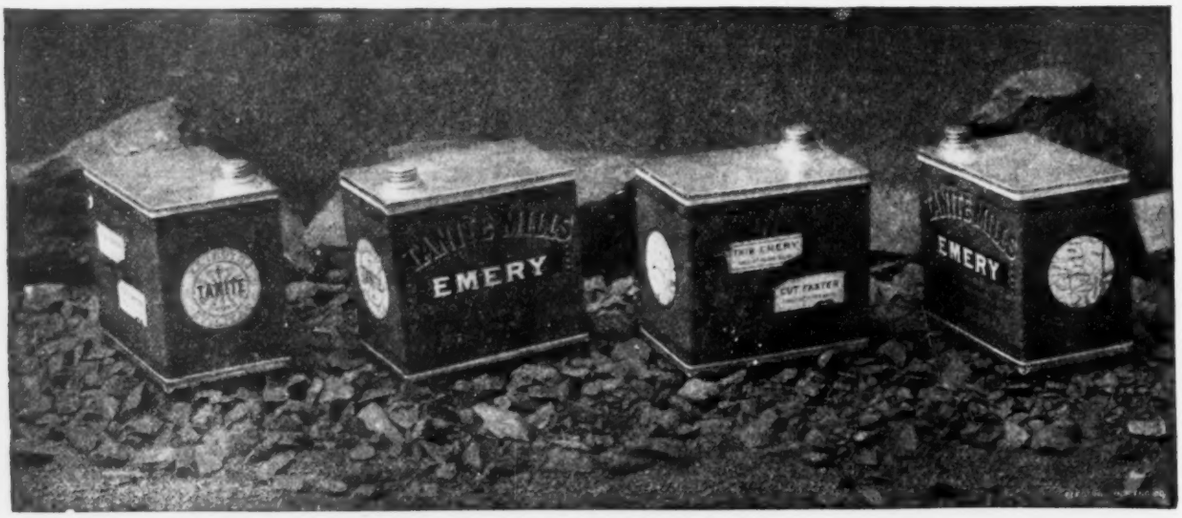

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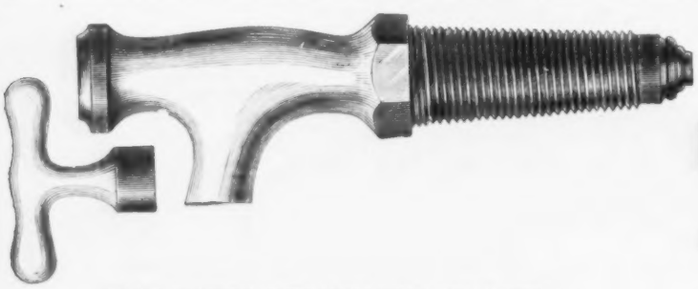

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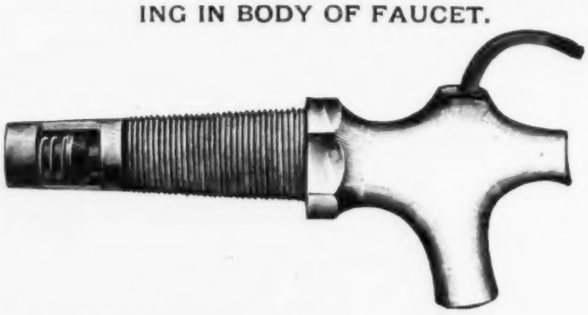

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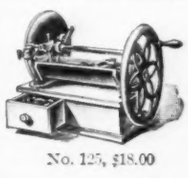

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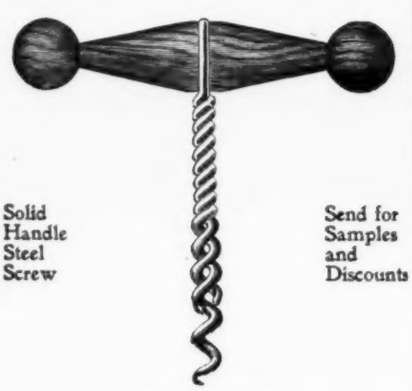

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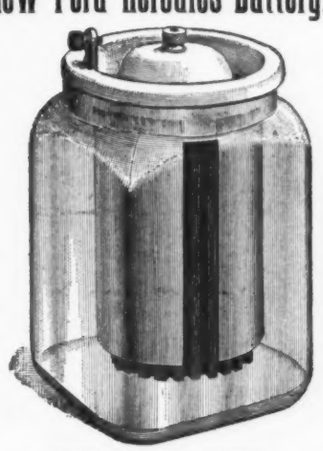

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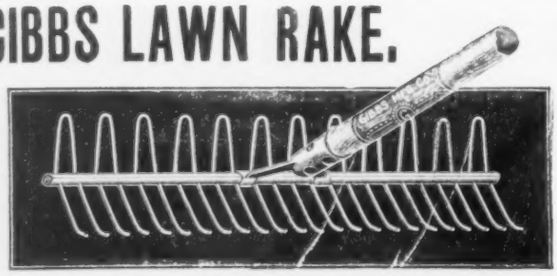

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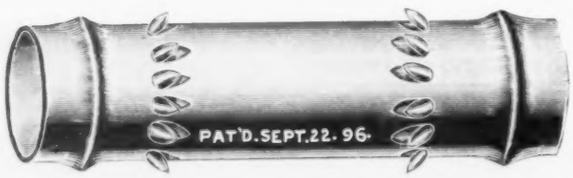

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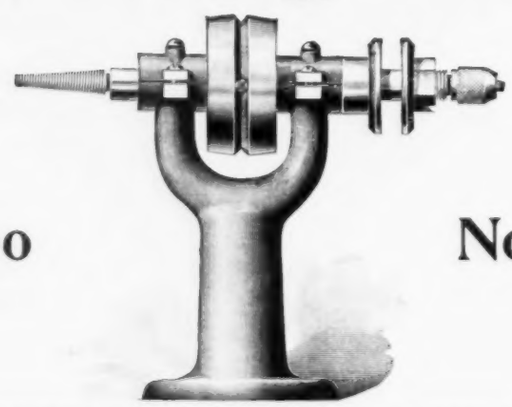

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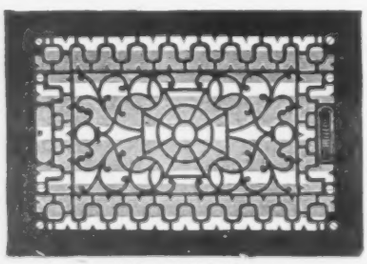

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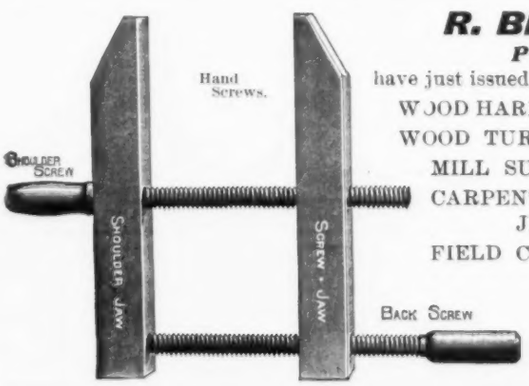

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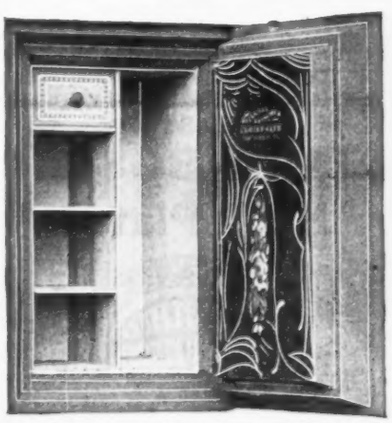

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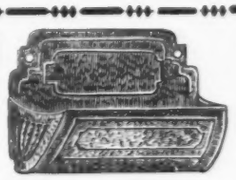

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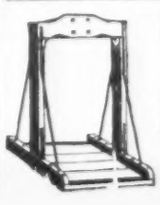

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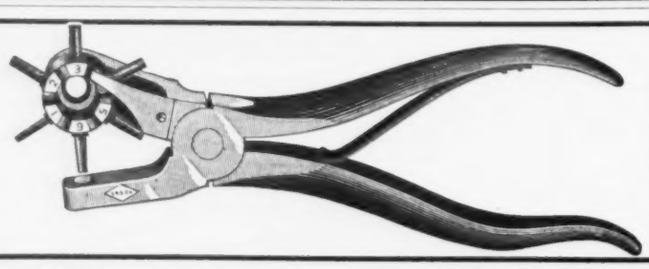

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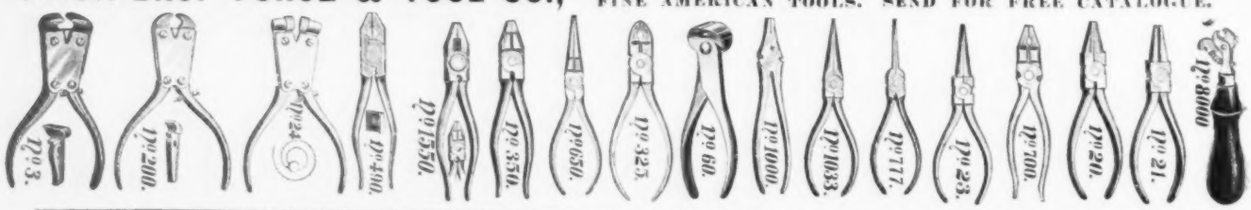

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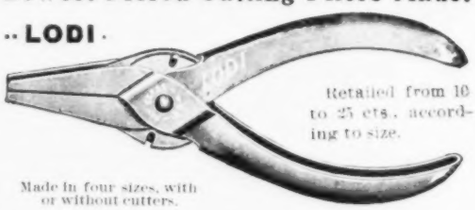

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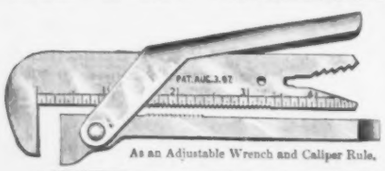

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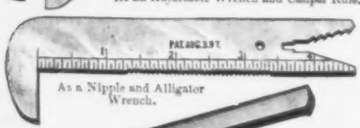

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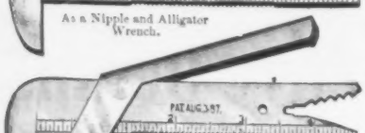

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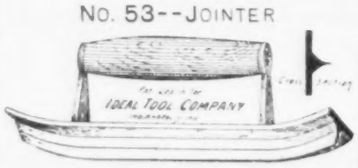

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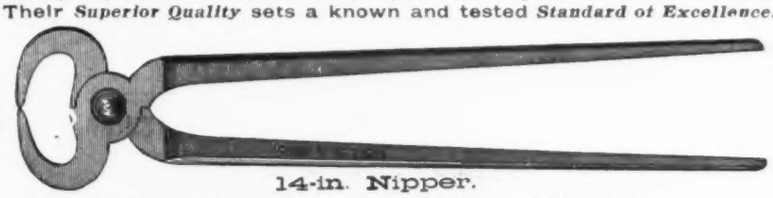

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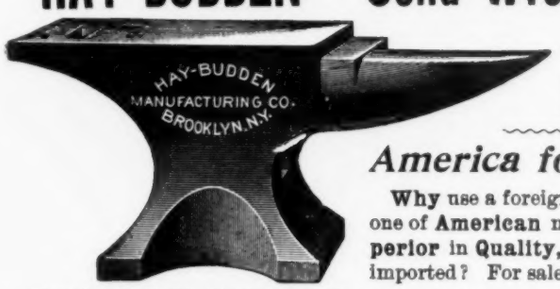

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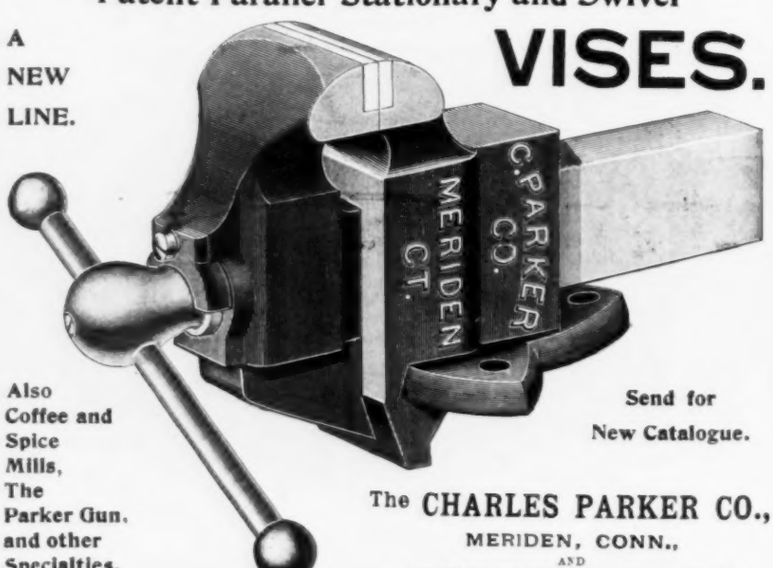

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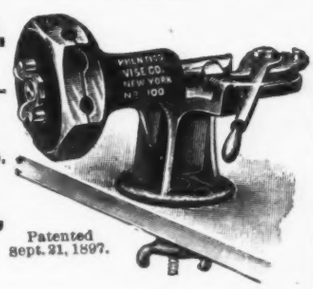

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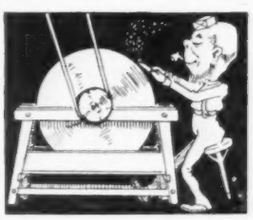

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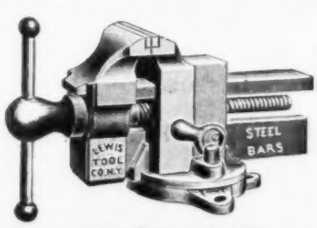

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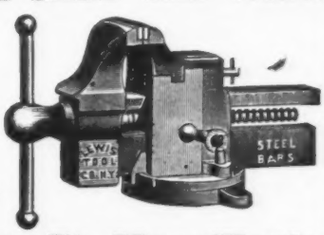

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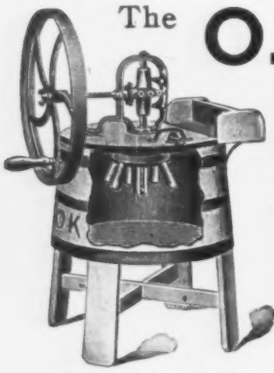

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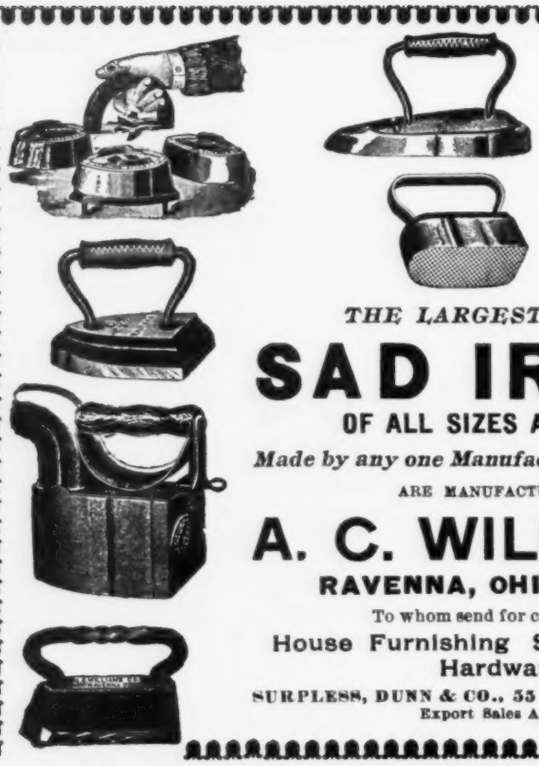

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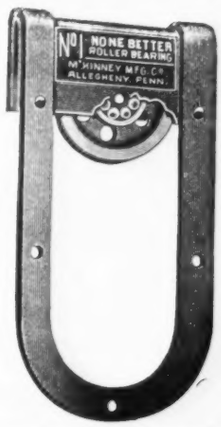

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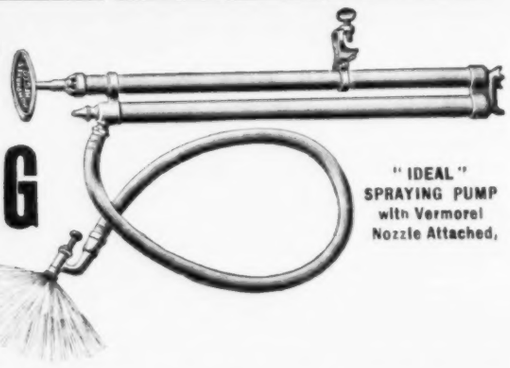

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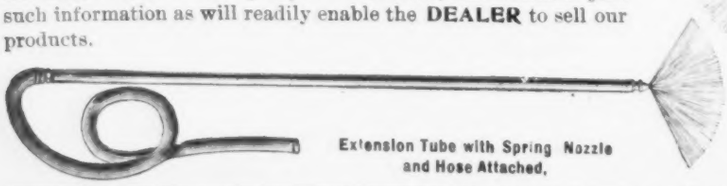

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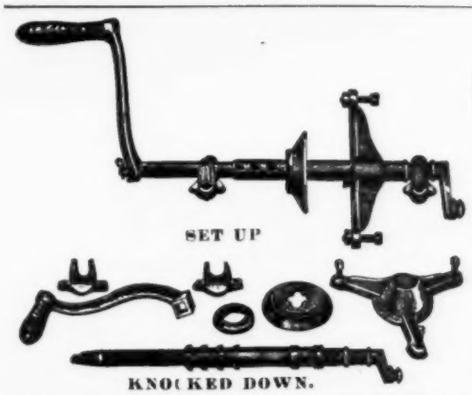

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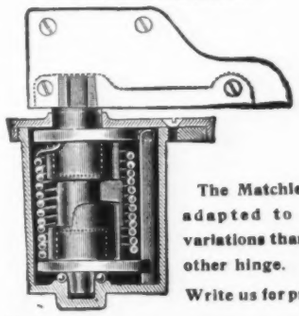

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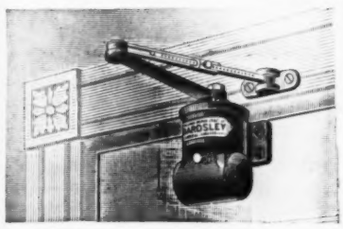
Oil Door Check and Spring



HAS new and improved features; is free from packing friction; the checking power can be released when the door is near the closing point; more oil can be added when needed without taking it from the door and it can be readily taken apart with the aid of a screw-driver when repairs are necessary.

Size A,	price	each,	$3 50
" B,	"	"	4 00
" C,	"	"	5 00
" D,	"	"	6 00
" E,	"	"	7 00

LIBERAL DISCOUNTS TO THE TRADE.

JOS. BARDSLEY,

147 to 151 Baxter St., NEW YORK CITY.

NEW CRESCENT HOSE MENDER.

IT'S FLAT—Won't cut the hose; mender and bands are of brass; pliers of iron, handsomely Japanned. Simple, convenient. Screw menders tear the lining and wire bands cut. Our flat bands make secure couplings and positively will not injure the hose. Are rapid sellers.

Send for prices and catalogue of these goods and our line of

Lawn Sprinklers, Bath-Room Fixtures, etc.

CRESCENT BRASS & IRON COMPANY,

DETROIT, - MICH.

The MILBRADT ROLLING Step Ladders

that were put up 15 years ago are still working entirely satisfactorily. Since then they have been improved a great many times, and we now only repeat the language of our customers when we say: "We do not see how you can make any further improvements on the ladders, as they are perfect in every respect."

The ***Milbradt Rolling Step Ladders*** are made to order and to fit all kinds of shelving, in various styles to suit all purposes, and are especially adapted for Hardware Stores. Write for Catalogue.

MANUFACTURED BY

G. A. Milbradt & Co.,

1922 and 1924 N. Broadway, St. Louis, Mo.

.....AND.....

JOHN CALANDER, St. Paul, Minn.

Pullman Sash Balance Co.,

MAKERS OF THE

"Pullman" Hardware Specialties

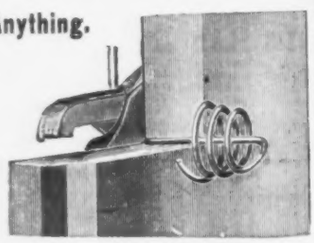
MAIN OFFICE AND WORKS.

Rochester, N. Y., U. S. A.

The Klondike Sample Holder

Holds Anything.

Display your goods and increase your sales



Samples removed or replaced instantly. Hence, no tarnished articles to sell at reduced prices. Write for free samples and prices to

N. M. BRINKERHOFF,

Gibsonburg, Ohio.

THE

Morley Easy Rolling Shelf Ladder

has stood the test of time and Won. It is the strongest and best constructed ladder on the market and we will guarantee to keep them in perfect running order for **15 years.**

Write Us for Prices.

MORLEY BROTHERS,

123 Tilden Ave., - - SAGINAW, MICH.

THE BICYCLE STEP LADDER.

Especially adapted for Hardware Stores

The newest, neatest, simplest, easiest operated and safest store ladder made. Highest Award World's Fair. Write us. **THE BICYCLE STEP LADDER CO., 50 State St., Chicago, Ills.**

Eastern Agent, H. N. YOUNGS, 8 Clinton Place, New York City. New York City and vicinity, E. J. HUSSEY & CO., 80 John St., New York City. California, JOHN WOODLOCK, 154-156 First St., San Francisco, Cal. North Western States, HOWE SCALE CO., Portland, Ore., Texas and S. W., ED. FOY, Dallas, Tex.

THE DEMPSEY DISPLAY DOORS

Save samples from Dust, Moisture and Rust. Detachable Sample Boards save time, worry and mixing stock. We make a full line of Hardware Fixtures, Cutlery Cases, Bolt Cases, Screw Cases, Sample Holders.

Dempsey Mfg. Co,

Offices, FAYETTE, MO.

FACTORIES,

Cleveland, O, and Fayette, Mo.

INTERCHANGEABLE
LOCK-CORNER SHELF BOXES.
Screw Cases, &c.
FOR THE HARDWARE TRADE
A. H. GREEN,
22 Park Place, New York.

HARDWARE SHELF BOXES.

Made of Wood. No screws or nails used to work out and cut your shelving.

Look the matter up. Descriptive circular with list of references and prices mailed on request. We also make a general line of Paper Boxes.

THE JESSE JONES PAPER BOX CO.,

615 and 617 Commerce St., Philadelphia.

Dumb Waiters.....

that don't keep you waiting.

Simple; smooth-running noiseless. All sizes, capacities and styles. Hardware dealers can sell them.

THE STORM MFG. CO.

Send for catalogue NEWARK, N. J.

LIVE HARDWARE MEN USE
PERFECT SHELF BOXES
WE MAKE
PERFECT SHELF BOXES
WRITE FOR
CATALOGUE AND PRICES.
C. P. MOORE,
RAVENSWOOD, W. VA.

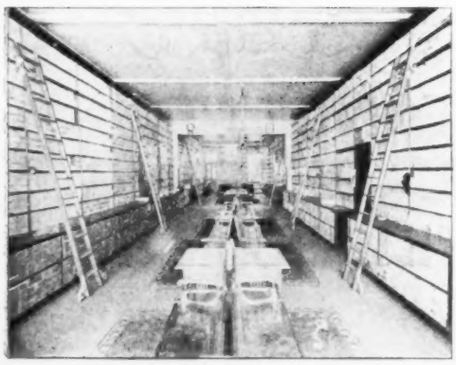
WRIGHTSVILLE HARDWARE CO.,

Manfrs. of

Gate, Blind and Shutter Hinges, Gate Latches, Frame Pulleys, Casters, Shelf Brackets, Sash Lifts, Drawer Pulls, Hooks, Thumb Latches and other goods.

SEND FOR CATALOGUE.

WRIGHTSVILLE, PA.

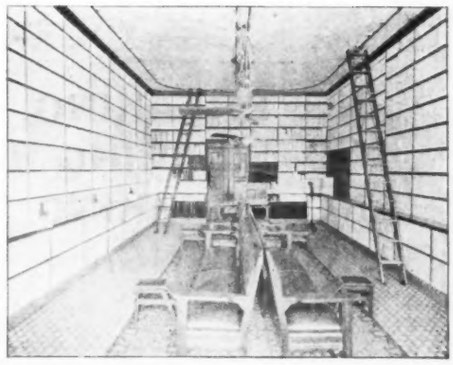


Our Ladders

Are adapted for any kind of a store.

Send for Catalogue.

Coburn Trolley Track Mfg. Co.,
HOLYOKE, MASS.



UNITED STATES STEEL LOCK Co. CLINTON, IOWA.

Sole makers of the

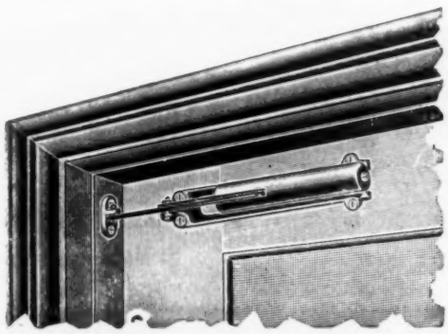
WARNER LOCKS

LOCKS.

Cold Rolled Steel,
Accurate in Construction,
Unsurpassed in Quality.

Hardware

Artistic in Design,
Elegant in Finish,
Moderate in Price.



THE WARNER . . . SCREEN DOOR CHECK.

An Air Check which is thoroughly **practical** at a price which makes it popular. To be used on doors having spring hinges or a door spring.

Is adjustable and can be used for panel doors 1¼ in. thick or lighter, but intended principally for screen doors.

It is easily put on, as there are **no loose parts** and the directions for putting on are exceedingly simple and easily understood by anyone.

GET OUR NEW CATALOGUE AND PRICES.

ARCADE MANF'G CO., Freeport. Ill., U. S. A.

The Walda Sectional Window Weight

Square and Round weights. Hang exactly from centre. Only 10 inch pockets required. Eliminates use of lead weights

The Hardware Dealer

with one-sixth the stock required in one-piece weights can fill any order. Weights crated with 100 lbs. in a box, both plainly marked.

The Contractor

saves time, money and delay by balancing windows exactly at once.

SEND FOR CIRCULAR.

Barney & Reed M'f'g Co.,
85 Water Street, - BOSTON, MASS.

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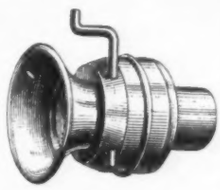
22 DEY STREET, NEW YORK.
Manufacturers of
SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.

Complete outfits of Speaking Tubes, Whistles, Electric, Mechanical, and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory DeKalb Ave. near Knickerbocker, Brooklyn, N. Y.



VAN DORN'S Steel Joist Hanger

HAS NO EQUAL

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THE VAN DORN IRON WORKS CO.,
Cleveland, Ohio.

STRUCTURAL STEEL AND ORNAMENTAL IRON WORKERS.

WE HAVE - - - GENUINE MARTY TRAPS

at sizes and prices to meet all fair competition. No need of buying the ineffective imitation traps dear at any price.

Our daily orders are from the leading dealers all over the country from Maine to California.

BURDITT & WILLIAMS,
Sole U. S. Agents, BOSTON, MASS.

Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,
Nos. 16 & 18 Chambers Street, New York.
MANUFACTURERS OF
BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

NO BREAKING.
NO WEARING DOWN.
NO CREAKING.
NO OILING.

STANLEY'S BALL-BEARING STEEL BUTTS.

(Cut of Washer, Full Size.)

Our New Artistic Booklet, just out, tells all about them.

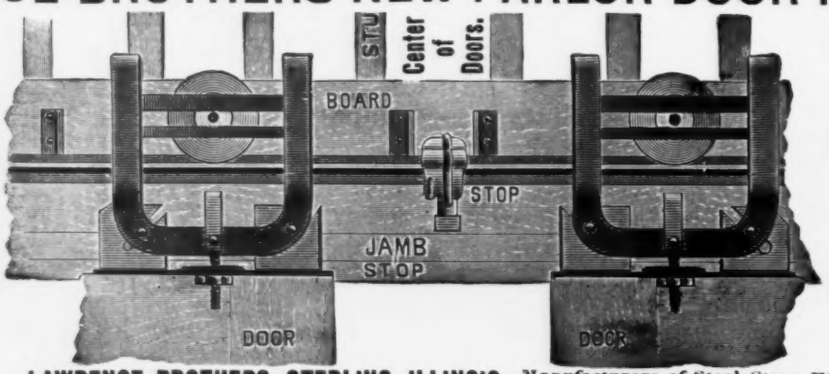
The Stanley Works, Dept. F, NEW BRITAIN, CONN. 79 Chambers St., N. Y.

Celebrated STAR BRAND
JACK CHAINS,
SAFETY, PLUMBERS' and LADDER CHAINS,
ESCUTCHEON PINS.

Now made by
The Turner & Seymour Mfg. Co.,
TORRINGTON, CONN.
Also Dover Egg Beaters, Curtain Rings, Upholstery Nails, &c.
Complete Line of Upholstery Hardware and Fancy Metal Goods.

LAWRENCE BROTHERS NEW PARLOR DOOR HANGER

Steel Frame,
Vulcanized Hard Fiber Wheel,
Double Flanged Steel Rail.



Perfectly Noiseless,
Hanger Frame will work on either side of Base Plate.
No Rights or Lefts.
No Metal Flanges to Rattle.

Apply for Circulars and Prices.
LAWRENCE BROTHERS, STERLING, ILLINOIS,
Manufacturers of Steel Strap Hinges, Door Hangers, Pulleys, and other Hardware Specialties.

Galvanized Awning Slide Rods.

Galvanized by Improved Process, insuring Perfect Finish.
Now is the time to buy before prices go still higher.
....WRITE FOR PRICES....

Manufactured by **Garland Chain Co., Rankin Station, Pa., U.S.A.**
Eastern Sales Agents: HENDRICKS & CLASS, 150 Nassau St., New York, U. S. A.

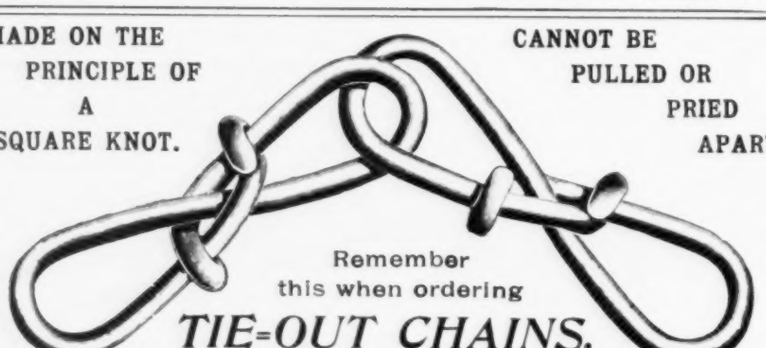
AUTOMATIC SCREEN DOOR CATCH.

These are the only catches that will automatically close screen doors tight, regardless of their being warped or sprung. A counted counter sample furnished with first order of 2 dozen catches. Ask your jobbers for them. If they don't keep them, write us.

THE AUTOMATIC DOOR CATCH CO.,
135-137 Lake St., Chicago, Ill.

MADE ON THE PRINCIPLE OF A SQUARE KNOT.

CANNOT BE PULLED OR PRIED APART.



Remember this when ordering
TIE-OUT CHAINS.
ONEIDA COMMUNITY, LTD., Niagara Falls, N. Y., U.S.A.

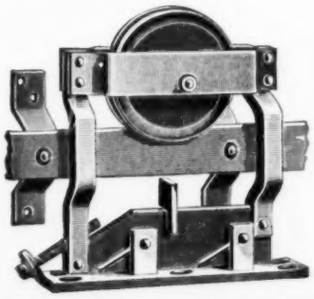
"LANE'S BALL BEARING"

IS THE

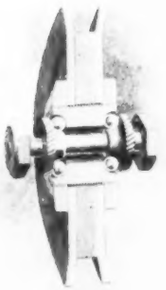
Best House Door Hanger

MADE.

Other Styles for Less Money.



Lane Brothers Co., Manufacturers,
POUGHKEEPSIE, N. Y.



THE
READING STANDARD
BLOCK (Patented).

This is the latest addition to our line of CHAIN BLOCKS. It is high in efficiency, has an adjustable automatic brake sustaining the load at any point of the lift, hoists and lowers rapidly, and being light and compact, can easily be taken from place to place.

When in the market for Chain Blocks write us for prices. We make other styles besides the Reading Standard.

Reading Crane & Hoist Works,
READING, PA.

Grand Rapids ALL STEEL Sash Pulleys.

Fasten Without Screws. Save Money and Time. Samples free.

Grand Rapids Sash Pulley Co.,
1 Pearl St., - Grand Rapids, Mich.

MODERN METHODS

of Store Arrangement, Accommodation and Effective Display of Hardware Stock are illustrated and described only in

The American Hardware Store.

450 Pages. 500 Illustrations.
THREE DOLLARS.

DAVID WILLIAMS COMPANY,
PUBLISHERS,
232-238 William St., New York.

The Chicago Wire Belt Hook.

Put up 200 in a box.

These Hooks will stand more strain than any lacing; can be used on any diameter pulley; will not cut out of the belt or become loose. As good for rubber and canvas as for leather belting. Made from the very best annealed Coppered Steel Wire, so that the points will not break in clinching.

MADE BY
Wm. E. Pratt Mfg. Co.
CHICAGO, ILL.

SILVER LAKE SASH CORD

Has been the standard for thirty years.

MANUFACTURED BY THE SILVER LAKE CO. BOSTON.

Every Hank Bears the Above Label.
SEND FOR SAMPLE.

Palmer's Common Sense Frame Pulley.

MANUFACTURED BY
PALMER HARDWARE MFG. CO.,
TROY, N. Y.

HALT!

HARDWARE DEALERS
CAN RECOMMEND
MORTON'S BRONZE AND STEEL
CABLE SASH CHAINS

As the best substitute for sash cords ever made. Some in daily use over 25 years. These chains are easily applied to any window. Will run equally as well on either round or square groove pulleys.

MANUFACTURED BY
THOMAS MORTON.
65 Elizabeth Street,
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SASH WEIGHTS.

E. E. BROWN & CO.,
McKean and Meadow Sts.,
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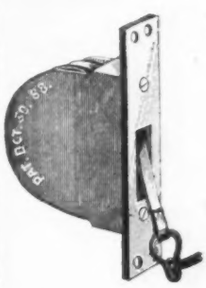

10 YEARS
Caldwell Sash Balance.

It stands the test of time.

Caldwell Mfg. Co.,
Rochester, N. Y.

PORTER SCREEN MANUFACTURING CO.,
Manufacturers of
Door and Window Screens,
CATALOGUE FREE. Burlington, Vt.

McCABE
Ball Bearing Door Hangers.
Simplest, Cheapest, Best.
SEND FOR CATALOGUE.
McCabe Hanger Mfg. Co.,
533-543 West 22d St. New York.

"PIONEER" FIFTY POINT CARBON STEEL TUBING

The uniformity obtained from our process of manufacture is especially desirable for bicycle purposes.

We invite our customers to come in on our floor and select their tube—test specimens from the general run, and to take any piece they choose to select as a sample of excellence.

NO SPECIALLY PREPARED SAMPLES.

THE
POPE TUBE CO.,
HARTFORD, CONN.

"Pioneers" in Correct Composition.

We should be pleased to quote you discounts on application. Send for printed matter.

Metal Head Floor Scrapers
or Squilgees.

The head is made of malleable iron and steel securely bolted together, with extra heavy rubber of good quality.

List and discounts on application.

The Osborn Manuf'g Co.,
BRUSHES— Cleveland, O.
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Manufacturers of **BELLS** of all Descriptions
ALSO BICYCLE SPECIALTIES.

SIGNAL GONG.
BEVIN BROS. MFG. CO., East Hampton, Conn.
Established in 1832

STEEL FOR PRESSED, STAMPED, DRAWN AND PLATED WORK.

ESTABLISHED 1879. INCORPORATED 1884

The WILMOT & HOBBS Mfg. Co.

MANUFACTURERS & EXPORTERS OF
BEST SOFT, EXTRA SOFT & SPRING, BESSEMER
& OPEN HEARTH, HOT ROLLED, ANNEALED & PICKLED, ALSO
BRIGHT COLD ROLLED "SWEDOH" STEEL.
UNEXCELLED FOR PRESSED, STAMPED,
DRAWN & PLATED WORK.

WILMOT'S PATENT
"CLINCHER" CYCLE TUBING
STRONGER THAN THE SEAMLESS.

WE MAKE A SPECIALTY OF
WILMOT'S PATENT SPRING STEEL BEDSTEAD TUBING
OF SUPERIOR FINISH, LIGHTNESS & STRENGTH.

ENGINEERS', & STEAMBOAT SETS, "COPPERIZED" ALSO NICKEL,
BRASS-PLATED & JAPANNED.

BRANCH OFFICE:
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MAIN OFFICES & WORKS:
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COLD ROLLED STRIP STEEL.

Patent "Clincher" Fifty Carbon "Swedoh" Spring Steel Cycle Tubing.

GLIDDEN'S METALLIC REPAIR OUTFIT

The one that has the Hinged Plugs.

THIS is the smallest, neatest, most compact and practical repair outfit ever offered to the public. Complete in a tin box 1½ inches long, 1 inch wide and ¼ inch thick. It will repair a puncture at once, without the use of cement, and any woman or child can use it. The plug is made of metal with a **hinged head, which can be forced into a much smaller opening than one with a stationary head.** Two sizes of plugs are furnished with each kit, which will fit ordinary punctures; also a cutter is furnished, to be used when the puncture is too small to admit the plug.

Directions for use. Place the flat plate of the plug so it will be loose on the key. Screw the key into the plug and insert into the hole, leaving the flat plate on the outside of tire. Draw back the key so that the plug will rest flat on the inside of the tire. Screw the flat plate to plug with wrench (left hand thread), and turn key to right. Remove the key by turning to left, and you have a permanent repair which does not injure the tire or its looks.

DISCOUNT TO THE TRADE, ASK YOUR JOBBER FOR IT.

——Sole Selling Agents,——

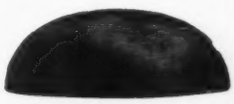
DAME, STODDARD & KENDALL, 370, 372 & 374 Washington St., Boston, Mass.

GEO. JOHNSON, Manufacturer of

ESTABLISHED 1877

Catasauqua, Pa.

Drawing, Blanking, Stamping and Plating to Order.



UNMOUNTED.

STEEL GONG BELLS

Made from Bright Cold Rolled Steel.

IN SIZES FROM 1¾-IN. TO 4-IN. DIAMETER

Heavily Nickel-Plated or Unfinished.

A stock of both unfinished and plated constantly on hand

Prices upon application.

Telephone Bells a Specialty

It's a Good Thing, Push It!

Corbin No. 5 P.

It is not merely good, it is the best Push-Button Bell on the market. Rings longer and winds quicker than any other. *The Push-Button is adjustable to any position.* Plain or ornamental style.

THE

Bristol Bell Co.,

BRISTOL, CONN., U. S. A.

We are fully prepared to Estimate on and Manufacture all kinds of

SHEET METAL NOVELTIES.

Send us your Models, and let us quote prices.

THE

SMITH & EGGE MFG. CO.,

BRIDGEPORT, CONN.

STERLING BELLS.

One best, the STERLING.

Bells of all Descriptions. Send for Catalogue.

N. N. HILL BRASS CO., East Hampton, Conn.

Bicycle, Sleigh, House, Hand, Trip and Rotary Door

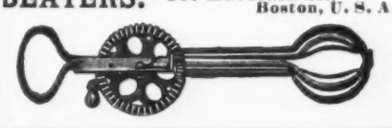
BELLS

Send for Catalogue and Price-List.

Starr Bros. Bell Co., Easthampton, Conn., U. S. A.

EGG BEATERS. We make the largest line in the world. Send for samples and prices.

STANDARD CO., 107 Haverhill St., Boston, U. S. A.



FREE SAMPLE, THE ONLY **BAR-KEEPER'S FRIEND** METAL POLISH

WRITE

GEO. W. HOFFMAN,

297 E. Washington St., Indianapolis, Ind

Hot Blast Torches

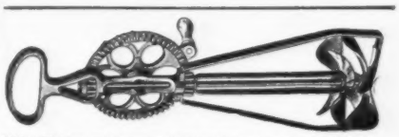
Are the best for

Painters, Plumbers, Electricians.

WHITE MFG. CO.,

158 Indiana St., CHICAGO.

H. ROMEYN SMITH, Eastern Manager.



153,052 lbs. of Iron and Steel have been made into Lyon Egg Beaters and Cream Whips. Send for New Price List Circular.

Nelson Lyon, Sole Manuf., 52 Green St., Albany, N. Y.

Hardware Dealers

can make a greater profit on the sale of

ONE :: ::

MONARCH BICYCLE

than on a Carload of Nails.

Price and quality unapproachable.

Monarch Roadsters, = $50.00
Defiance Roadsters, = $35.00
Our King and Queen Bicycles,
The greatest pair of wheels on earth for **$25.00**
Monarch Chainless, = $75.00

Every model embodies 1899 features throughout.

AGENTS WANTED in every City, Town and Hamlet.

Send for Catalogue.

"Ride a Monarch and keep in front."

MONARCH CYCLE MFG. CO., Lake, Halstead and Fulton Streets, CHICAGO.

Branches: NEW YORK, LONDON, HAMBURG.

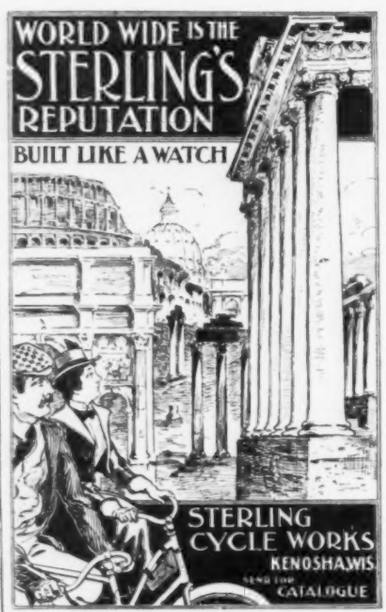
A CARD.

We shall occupy this space for the next 52 issues of *The Iron Age* to tell the Hardware dealers about the

Ingersoll Watches

and now to begin: They are furnished in four grades, from $1.00 to $1.75 Retail, and from $9.00 to $14.40 Doz. Wholesale. Hardware trade in 1898 sold over 200,000 of them. Better let us send you samples.

ROBT. H. INGERSOLL & BRO.,
67 Cortlandt St., N. Y.



THE

STERLING

"Built like a Watch."

Chain Models, - - $50.00
Specials, - - - $60.00
Chainless Models, - $75.00
Tandems, - - - $75.00

A valuable agency for 1899 for energetic dealers in hardware or kindred trades. Send for catalog and terms.

Sterling Cycle Works,
KENOSHA, WIS.

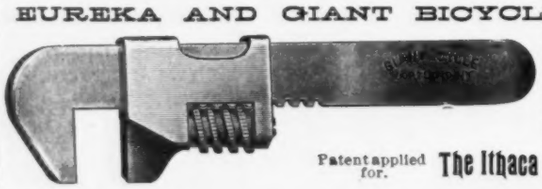
FORGINGS

Carriage, Bicycle and Special.

Correspondence Solicited.

E. D. CLAPP MFG. CO.
AUBURN, N. Y.

EUREKA AND GIANT BICYCLE WRENCHES



The only wrenches tempered like tools and that are made from tool steel—in water—and no case hardening about them. The Eureka is the only quickly adjusted wrench on the market. Done instantly without turning knurl. Fully warranted to be as stated.

Patent applied for. **The Ithaca Drop Forge Co., Ithaca, N. Y.**

Sweeping Victories for Remington Guns.

THE SPORTSMEN ASSOCIATION CHAMPIONSHIP
AND
THE CONTINUOUS MATCH

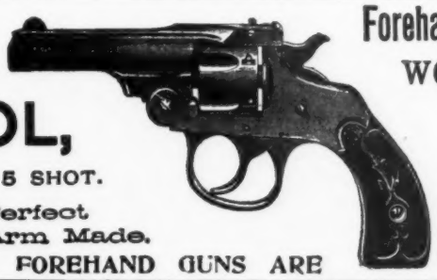
Were won by Rolla O. Heikes shooting a Remington Hammerless. Third and Fourth Prizes were won respectively by E. D. Fulford and Le Roy B Woodard with Remington Guns.

Send for our Prize Offer for the G. A. R. of 1899.

REMINGTON ARMS CO.,

315 Broadway, New York. *Ilion, N. Y.*

A NEW AUTOMATIC **PISTOL,**



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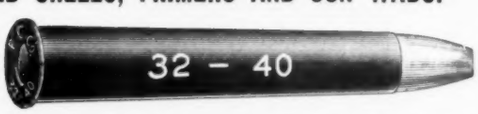

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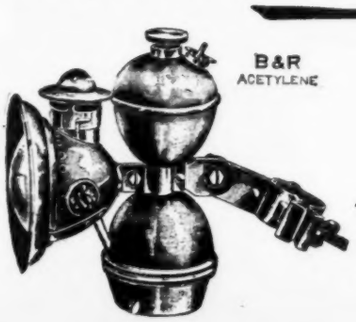

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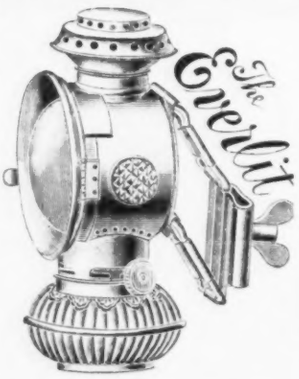

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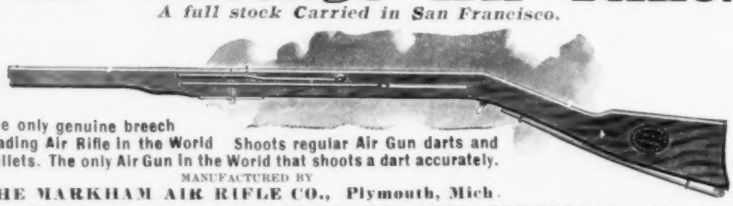

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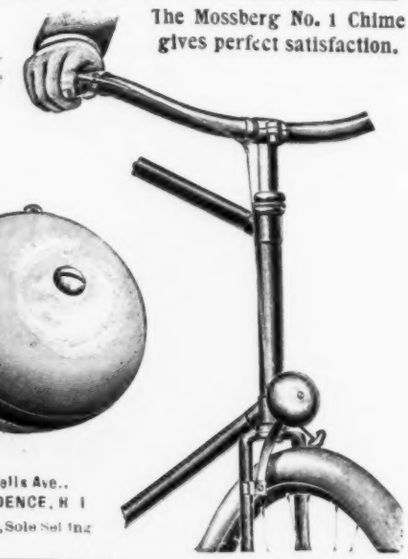

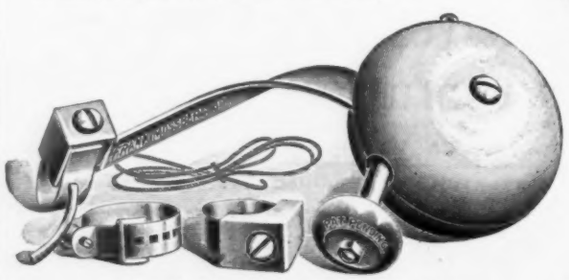

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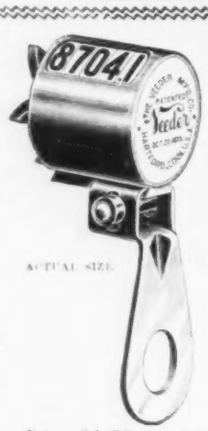

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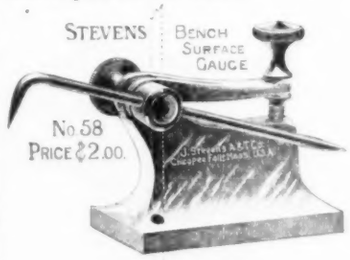

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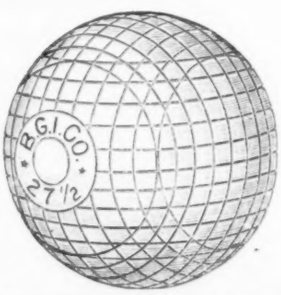

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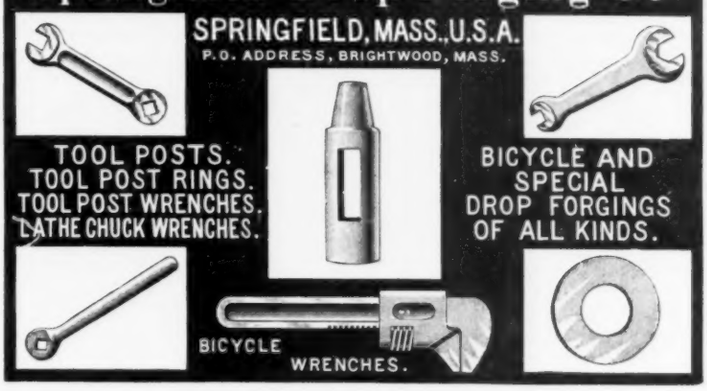

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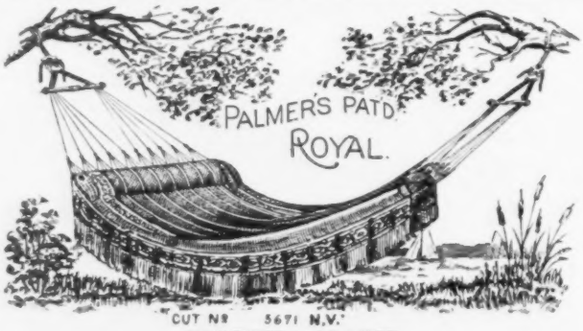

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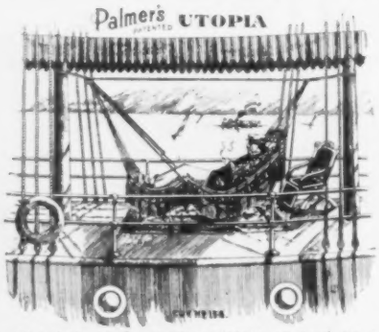

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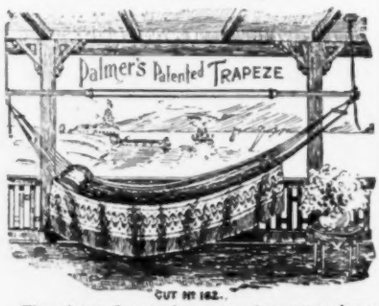

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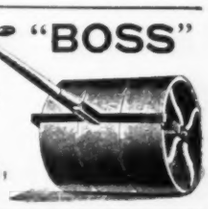

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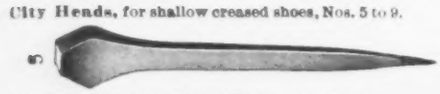

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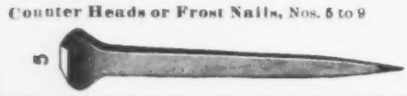

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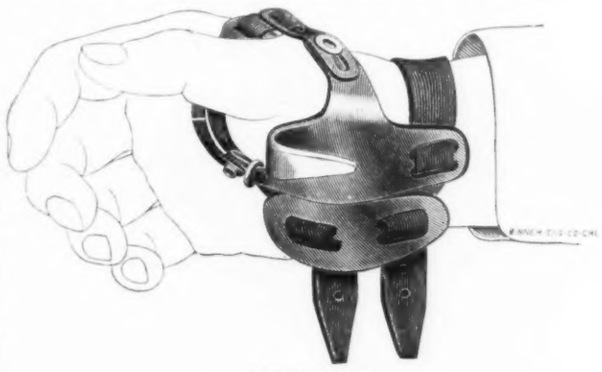

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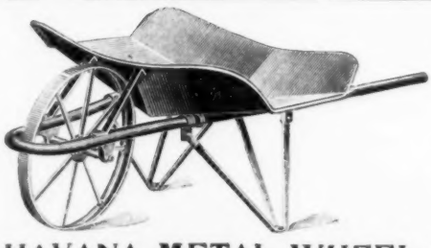

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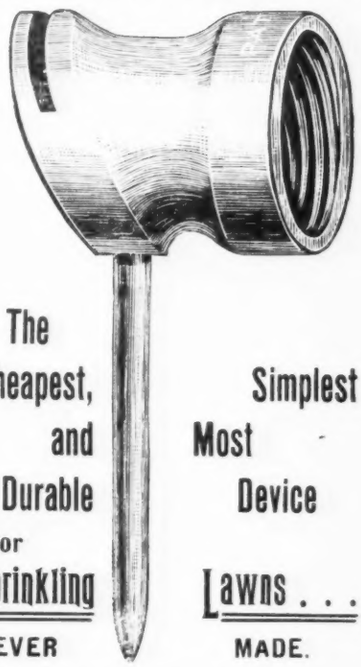

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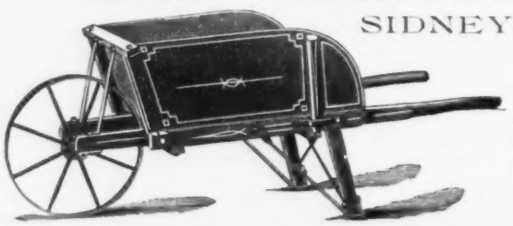

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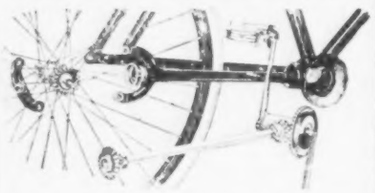

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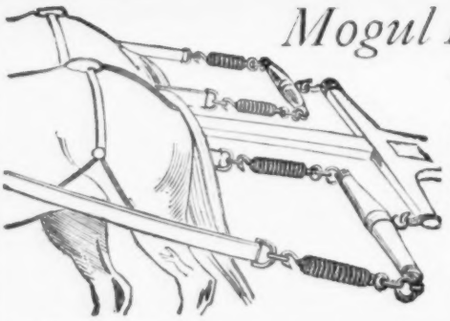

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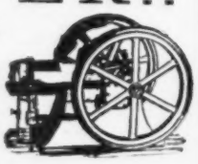

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Wood, Walter A. Mowing and Reaping Mch. Co., Hoosick Falls, N. Y.

Castings, Steel.
Arcade Malleable Iron Co., Worcester Mass.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Flagg, Stanley G. & Co., Phila., Pa.
Livermore Homer F., Boston, Mass.
New England Steel Castings Co., Philadelphia, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.

Catalogue Files.
Folding Paper Box Co., South Bend, Ind.

Ceilings, Metal.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Cements.
Warner, Chas. Co., Wilmington, Del.

Cement Workers Tools.
Ideal Tool Co., Indianapolis, Ind.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Ct.
Garland Chain Co. Rankin, Pa.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
Oneida Community, Ltd., Niagara Falls, N. Y.
Turner & Seymour Mfg. Co., Torrington, Conn.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Chemists.
Stillman & Hall, Ltd., 15 Wall St., N. Y.

Cherry Stoners.
Enterprise Mfg. Co., Philadelphia, Pa.

Chisels.
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White L. & I. J. Co. Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Holland Mfg. Co., Erie, Pa
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Churns.
Blanchard Porter Sons Co., Nashua, N. H

Circular Sawing Machines.
Kidder, R. E., Worcester, Mass.

Clamps.
Hammer & Co., Branford, Conn.

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Clipping Machines.
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Clothes Dryers.
Hill Dryer Co., Worcester, Mass.

Clothes Pins.
U. S. Clothes Pin Co., Montpelier, Vt.

Coal.
Vinton Colliery Co., Phila., Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Parker, Chas. Co., Meriden, Conn.

Coke.
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Vinton Colliery Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Cold Saws.
Lucas & Gliem, Philadelphia, Pa.

Commercial Literature.
Maule, Francis I., Philadelphia, Pa.

Commercial Paper.
Lusch, H. B., Chicago, Ill.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conductor Pipe.
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.

Conveying Machinery.
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.

Cooking Utensils.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.

Copper Hammers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Rivets and Burrs.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Copper Tacks and Nails.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Cordage.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.

Core Compound.
Holland Linseed Oil Co., Chicago, Ill.

Core Ovens.
Millett Core Oven Co., Brightwood Mass.

Cork Screws.
Clough, Rockwell, Alton, N. H.
Erie Specialty Co., Erie, Pa.

Corn Hooks.
Withington & Cooley Mfg. Co., Jackson, Mich.

Corn Huskers.
Wilcox Mfg. Co., Auroro, Ill.

Corrugated Iron.
Cincinnati Corrugating Co., Piqua, O.

Cotton Ties.
Export Iron & Steel Co., Pittsburgh, Pa.
Whitney, A. R. & Co., 71 B'way, N. Y.

Countershafts.
Reeves Pulley Co., Columbus, Ind.

Counting Machines.
Durant, W. N., Milwaukee, Wis.

Couplings, Compression.
Sennett, Geo. B. Co., Youngstown, O.

Cow Ties.
Garland Chain Co., Rankin, Pa.

Cranes.
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Speidel, J. G., Reading, Pa.

Crucibles.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Cupolas.
Parson, J. W. Co., Philadelphia, Pa.

Curry Combs.
Baker, L. B. Mfg. Co., Racine Junction, Wis.

Cutlery.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Chatillon, John & Sons, 85 to 89 Cliff St., N. Y.
Dame, Stoddard & Kendall, Boston.
Goodell Co., Antrim, N. H.
Nichols Bros., Greenfield, Mass.
Supplee Hardware Co., Phila., Pa.

Cutting Off Machines.
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gliem, Philadelphia, Pa.

Cyanide Potassium.
Talcott, Frisbie & Co., Hartford, Conn.

Cyclometers.
Miller, Edward & Co., Meriden, Ct.
Veeder Mfg. Co., Hartford, Conn.

Dairy Supplies.
Blanchard, Porter Sons Co., Nashua, N. H.

Dampers.
Stover Mfg. Co., Freeport, Ill.
Williams, A. C., Ravenna, O.

Diamond Tools.
Dickinson, Thos. L. 45 Vesey St., N. Y.

Dies.
Adriance Mach. Works, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Hay-Budden Mfg Co., Brooklyn, N. Y.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Smith, Thos. W. & Co., Worcester, Mass.
Standard Stamping & Die Co., B'klyn, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.
Wilson & Smith, Worcester Mass.

Display Doors.
Dempsey Mfg. Co., Fayette, Mo

Door Bells.—*See Bells and Gongs.*

Door Checks and Springs.
Arcade Mfg. Co., Freeport, Ill.
Bardsley, Jos., 147-151 Baxter St., N. Y.
Pullman-Cash Balance Co., Rochester, N. Y.
Toler, John & Sons Co., Newark, N. J.

Draught Springs.
Burditt & Williams, Boston, Mass.
Wilson Mfg. Co., 149 Cedar St., N. Y.

Draw Benches.
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.

Dredges and Excavators.
Vulcan Iron Works, Toledo, Ohio.

Drilling Machines.
Barnes, W. F. & John Co., Rockford, Ill.
Bausch & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale Mch. Co., Worth and Centre Sts., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore Md.
Grant Machine Tool Works, Cleveland, O
Lord Bros. Mfg. Co., Tilton, N. H.
Norton & Jones Machine Tool Works, Plainville, Conn.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
State Dwight Machine Co., Hartford, Ct.
Weiss Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
York, S. M. Co., Cleveland, O.

Drilling Machines, Automatic.
Gould & Eberhardt, Newark, N. J.

Drop Forgings.
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Clapp, E. D. Mfg Co., Auburn N. Y.
Eccles, Richard, Auburn, N. Y.
Keystone Drop Forge Co., Philadelphia.
Kilborn & Bishop Co., New Haven, Conn
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield Mass.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Wilcox & Howe Co., Derby, Conn.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.

Drop Hammers.
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Stiles, E. S. Press Co., Watertown, N. Y.
Williams, White & Co., Moline, Ill.

Drop Presses.
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Stiles & Parker Press Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Mfg. Co., Philadelphia, Pa.
Speidel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.

Dynamos.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Eave Trough Hangers.
Berger Bros. Co., Philadelphia, Pa.
Oatman Bros., Medina, Ohio.

Edge Tools.
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Cerro-Carbon Castings Co., Philadelphia Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass.

Elbows.
Sheparo, Sidney & Co., Buffalo, N. Y.

Electric Batteries.
Penn Electric Mfg. Co., Penn. Ind.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St.

Electric Lamp.
McIntyre, Elmer E., Pittsburgh, Pa.

Electric Lighting and Power Apparatus.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co. Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Elevators. *Makers of.*
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son, Coatesville, Pa.
Speidel, J. G., Reading Pa.

Elevator Buckets.
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.

Elevator Enclosures and Cabs.
Ludlow Saylor Wire Co., St. Louis, Mo.

Emery.
Tanite Co., Stroudsburg Pa.

Emery Wheels.
American Emery Wheel Works, Providence, R. I.
Diamond Mach. Co., Providence, R. I.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., Bridgeport, Conn.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitrified Emery Wheel Co., Westfield, Mass.

Emery Wheel Dresser.
Dickinson, Thos. L., 45 Vesey St., N. Y.

Engineers and Contractors.
Aiken, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburg, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Heyl & Patterson, Pittsburgh, Pa.
Kennedy, Julian, Pittsburgh, Pa.
Lamond, David, Pittsburg, Pa.
Laughlin, Alex & Co., Pittsburgh, Pa
McClure, G. W. & Son, Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
New Castle Engineering Works, Pittsburgh, Pa.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Sague, Samuel A., Cleveland, O.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.

Engines, Gas and Gasoline.
Charter Gas Engine Co., Sterling, Ill.
Metz, Aug., 128-138 Mott St., N. Y.
Palmer, Bros., Mianus, Conn.
Thompson, J. & Sons Mfg. Co., Beloit, Wis
Weber Gas & Gasoline Engine Co., Kansas City, Mo.

Engines, Kerosene.
Aultman Co., Canton, O.

Engines, Steam.
Allis, E. P. Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Sennett, Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.

Engravers.
Mugford, A., Hartford, Conn.

Expanding Mandrels.
LeCount, Wm. G., So. Norwalk, Conn.

Expansion Bolts.
Church, Isaac, Toledo, O.
McCabe Hanger Mfg. Co. 533-543 W. 22d Street, N. Y.
Seaman, D. C. & Co., Philadelphia, Pa.
Steward & Romaine Mfg. Co., Phila., Pa.

Experimental Work.
International Electric Co., 76 Beekman St., N. Y.

Exporters.
Markt & Co., Ltd., 193-194 West St., N. Y.

Farriers' Tools.
Heller & Bros., Newark, N. J.

Faucets, Wooden.
Boston & Lockport Block Co., Boston Mass.
McKenna, A. & T., Pittsburgh, Pa.
Sommer's, John, Son, Newark, N. J.

Feed Cutters.
Silver Mfg. Co., Salem, O.

Feed Water Heaters and Purifiers.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven.
Taunton Locomotive Mfg. Co., Taunton Mass.
Webster, Warren & Co., Camden, N. J.
Wefugo Co., Cincinnati, O.
Whitlock Coil Pipe Co., Elmwood, Conn

Fencing, Iron and Wire.
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Bolles, J. E. Iron & Wire Works, Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Columbus Wire & Iron Works, Columbus, Ohio.
De Kalb Fence Co., De Kalb, Ill.
Detroit Fence Co., Detroit, Mich.
Dwiggins Wire Fence Co., Anderson, Ind.
Ellis & Halfenbarger, Indianapolis, Ind.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Kilmer Wire Mfg. Co., Chicago, Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.

Files and Rasps.
Manufacturers of.
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond, Phila.
Disston, Henry & Sons, Phila., Pa.
Heller & Bros., Newark N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.

Filters.
Wefugo Co., Cincinnati, O.

Fire Brick.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
McLain, E. S. & Son, Pittsburgh, Pa.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Stove Lining Co., Taunton, Mass
Union Mining Co., Mt. Savage, Md.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Shovels.
Wheeling Hinge Co., Wheeling, W. Va.

Flanged Fittings.
Latrobe Steel Co., Philadelphia, Pa.

Flexible Shafting.
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Floor Hinge.
Lawson Mfg. Co., Milwaukee, Wis.

Floor Scrapers.
Osborn Mfg. Co., Cleveland, O.

Flue Cleaners.
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.

Fly Killers.
Bigelow, J. F., Worcester, Mass.

Foot Rests.
Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.

Forks, Hay and Manure.
Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich

Foundry Facings.
Obermayer, S. Co., Cincinnati, O.

Foundry Lamps.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.

Foundry Supplies.
Hendee Wire Brush Co., Milwaukee, Wis.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.
Smooth Ore Mfg. Co., Jersey City, N. J.

Friction Clutches.
Eastern Machinery Co., New Haven, Ct.

Friction Cones.
Evans Friction Cone Co., Boston, Mass.

Fuses.
Ensign Bickford & Co., Simsbury, Ct.

Gages.
Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware.
Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing Process.
U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Tools.
Sheble & Klemm, Phila., Pa.
Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Compressors.
Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Producers.
Duff Patents Co., Allegheny, Pa.
Smythe, S. R. Co., Inc., Pittsburg, Pa.
Swindell, W. & Bro., Pittsburg, Pa.

Gasoline Engine Castings.
Vanduzen Gasoline Engine Co., Cincinnati, O.

Gauges, Carpenters'.
Mayhew, H. H. Co., Shelburne Falls, Mass

Gauges, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gears.
Boston Gear Works, Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Morse, Williams & Co., Phila., Pa.
Nuttall, R. D. Co., Allegheny, Pa.
Poole, Robt. Son & Co., Baltimore, Md.

Gear Cutters.
Clough, R. M., Tolland, Ct.
Gould & Eberhardt, Newark, N. J.
Whiton, D. E. Mch. Co., New London, Ct.

Glass Cutters.
Barrett, W. L., Bristol, Conn.
Monce, S. G., Unionville, Conn.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Grass Hooks.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Grates, Rocking.
Sennett, Geo. B. Co., Youngstown, O.

Grinding and Polishing Mchs.
American Emery Wheel Works, Providence, R. I.
Barnes, W. F. & John Co., Rockford Ill.
Besly, C. H. & Co., Chicago, Ill.
Brown & Sharpe Mfg. Co., Providence.
Builders Iron Foundry, Providence, R. I.
Compress Wheel Co., Chicago, Ill.
Cutter, Wood & Stevens, Boston, Mass.
Diamond Mach. Co., Providence, R. I.
Florence Machine Co., Florence, Mass.
Landis Tool Co., Waynesboro, Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Safety Emery Wheel Co., Springfield O
Springfield Mfg. Co., Bridgeport, Conn.
Tanite Co., Stroudsburg, Pa.

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Grindstones.
Cleveland Stone Co., Cleveland, O.

Grindstone Hangers.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Hack Saw Blades.
Millers Falls Co., 93 Reade St., N. Y.

Hack Saws.
Springfield Machine Screw Co., Springfield, Mass.

Hammers.
Heller & Bros., Newark, N. J.

Hammocks.
Palmer, I. E., Middletown, Conn

Hand Milling Machines.
Costlio, J. E. Machine Works, Brooklyn N. Y.

Hangers, Door.
Chisholm & Moore Mfg. Co., Cleveland, O.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros. Co., Poughkeepsie, N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., Fairfield Iowa.
McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
Wilcox Mfg. Co. Aurora, Ill.

Hangers, Shafting.
Ball Bearing Co., Boston, Mass.
Dodge Mfg., Co., Mishawaka, Ind.

Hardware Comm'n Merchants.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Hardware Manufacturers.
Arcade Mfg. Co., Freeport, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Ney Mfg Co., Canton, Ohio.
Parker, Cmas. Co., Meriden, Conn.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Stanley Works, New Britain, Conn.
Supplee Hdw. Co., Phila., Pa.
Union Mfg. Co., 103 Chambers, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.
Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents.
Graham, John H. & Co., 113 Chambers.
Sickels & Nutting Co., 35 Barclay St., N.Y
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Berger Bros. Co., Philadelphia, Pa.
Enterprise Mfg. Co. of Pa., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain.
North Bros. Mfg. Co., Philadelphia, Pa.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Scranton & Co., The, New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Wilson & Smith, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Imperial Bit & Snap Co., Racine, Wis.
Oneida Community, Ltd., Niagara Falls, N. Y.

Hasps and Staples.
McKinney Mfg. Co., Allegheny, Pa.

Hay Knives.
Clark & Parsons Co., E. Wilton, Me.
Ney Mfg. Co., Canton, Ohio.

Hay Tools.
Louden Machinery Co., Fairfield, Iowa.
Myers, F. E. & Bro., Ashland, O.

Heating and Ventilating Apparatus.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Heel Plates.
Star Heel Plate Co., Newark, N. J.

Hinges.
Lawrence Bros., Sterling, Ill.
McKinney Mfg. Co., Allegheny, Pa.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Hoes, Garden Planters, &c.
Iowa Farming Tool Co., Fort Madison, Ia.
Scovil, D. H., Higganum, Conn.

Hog Rings.
Pratt, Wm. E. Mfg. Co., Chicago, Ill.

Hoists, Air.
Pedrick & Ayer Co., Philadelphia, Pa.
Ridgway, Craig & Son, Coatesville, Pa.

Hoists, Chain and Rope.
Burr Mfg. Co., Cleveland, Ohio.
Chisholm & Moore Mfg. Co., Cleveland, O.
Eckstein, C. G., 249 Centre St., N. Y.
Fulton Iron & Engine Wks., Detroit.
Harrington, E., Son & Co., Phila., Pa.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Wks., Reading, Pa.
Speidel, J. G., Reading, Pa.

Hoisting Machines.
Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.

Hollow Ware.
Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hoops, Iron and Steel.
Export Iron & Steel Co., Pittsburgh, Pa.

Horse Nails.
Capewell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes.
Burden Iron Co., Troy, N. Y.
Phœnix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.

Horse Clipping Machines.
Chicago Flexible Shaft Co., Chicago, Ill.

Horseshoe Calks.
Kinnear Calk Co., Columbus, O.

Horseshoe Studs.
Leonhardt & Co., Schoenseerg Berlin, Germany.

Hose.
Boston Belting Co., Boston, Mass.

Hose Couplings.
Clark, W. J. & Co., Salem, Ohio.
Sherman, H. B. Mfg. Co., Battle Creek, Mich

Hose Couplings, Air.
Pedrick & Ayer Co., Philadelphia, Pa.

Hose Menders.
Crescent Brass & Iron Co., Detroit, Mich
Graham, Jno. H. & Co., 113 Chambers St., N. Y.
Sherman, H. B. Mfg. Co., Battle Creek, Mich.

Hose Washers.
Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties.
Williams, A. C., Ravenna, O.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, Wm. H., Media, Pa.

Hydraulic Tools.
Watson-Stillman Co., 204 E. 43d St., N. Y.
Wood, R. D. & Co., Phila., Pa.

Ice Breaking Machines.
Wharton, J. S. Lovering, Philadelphia.

Ice Cream Dishes.
Clad, V. & Sons, Phil..., Pa.

Ice Cream Freezers.
North Bros. Mfg. Co., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shredders.
Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tools.
Ithaca Drop Forge Co., Ithaca, N. Y.
Nashua Iron & Brass Fdry. Co., Nashua, N. H.
Williams, A. C., Ravenna, O.
Wood Wm. T. & Co., Arlington, Mass.

Injectors.
Eynon-Evans Mfg. Co., Phila., Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

Iron and Steel, Swedish.
Harvey, Arthur C. Co., Boston, Mass.
Lidenberg, N., 150 Broadway, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Potts, Horace T. & Co., Phila., Pa.

Iron Commission Brokers.
Cotton, Barclay W. & Co., Phila.
Cox, Justice, Jr., Philadelphia, Pa.
Etting, Edw. J., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
O'Donnell, James, Chicago, Ill.
Wister L. & R. & Co., Phila. Pa.

Iron, *Manufacturers.*
Whitney, A. R. & Co., 71 B'way N. Y.

Merchants.
Cotton, Barclay W. & Co., Phila.
Cunliffe, R. M., Phila., Pa.
Hoffman, J. W. & Co., Philadelphia.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 577 to 583 Greenwich St., N. Y.
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., 66 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Importers.
Wheelock, Lovejoy & Co., N. Y. and Boston

Iron, Galvanized Sheet.—*See Sheets, Galvanized.*

Iron, Sheet.
Apollo Iron & Steel Co., Pittsburgh, Pa.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Cincinnati Corrugating Co., Piqua, O.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Iron Ore.
Pilling & Crane, Phila., Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Van Dorn Iron Works Co., Cleveland, O.

Job Lots, Hardware.
Browne & Mansfield, 245 Broadway, N.Y.
Chicago House Wrecking Co., Chicago, Ill.

Joist Hanger.
Von Dorn Iron Works Co., Cleveland, O.

Keg Machinery.
Gerlach, Peter & Co., Cleveland, O.

Kegs.
Bell, Edwin & Sons Co., Youngstown, O.
Gerlach, Peter & Co., Cleveland, Ohio.
Greif Bros., Cleveland, Ohio.

Keys, Machine.
Morton Mfg. Co., Muskegon Heights, Mich.

Lacquers.
Egyptian Lacquer Mfg. Co., 152 Front St., N. Y.

Lasts and Last Stands.
Kupferle, Jno, C., St. Louis, Mo.
Pleuger & Henger Mfg. Co., St. Louis, Mo.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Lathe Dogs.
LeCount, Wm. G., So. Norwalk, Conn.

Lathes.
American Tool Works Co., Cincinnati, O.
Bement, Miles & Co., Phila., Pa.
Brown & Sharpe Mfg. Co., Providence, R. I.
Davis, W. P. Machine Co., Rochester, N. Y
Draper Mch. Tool Co., Worcester, Mass.
Fish, H. C. Mch. Wrks., Worcester, Mass.
Florence Machine Co., Florence, Mass.
Grant Machine Tool Works, Cleveland, O
Harrington, E. Son & Co., Phila., Pa.
Johnson, Israel H., Jr., & Co., Phila., Pa.
Jones & Lamson Mch. Co., Springfield, Vt.
McCabe, J. J., 14 Dey St., N. Y.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, O.
Potter & Johnson Co., Pawtucket, R. I.
Pratt & Whitney Co., Hartford Conn.
Prentice Bros., Worcester, Mass.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Windsor Machine Co., Windsor, Vt.
Young, W. C. Mfg. Co., Worcester, Mass.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Launches.
Palmer Bros., Mianus, Conn.

Lawn Mowers.
Coldwell Lawn Mower Co., Newburgh, N. Y.
Lawson Mfg. Co., Milwaukee, Wis.
New Mfg. Co., Canton, Ohio
Phila Lawn Mower Co., Phila., Pa.

Lawn Mower Sharpeners.
Wilcox Mfg. Co., Aurora, Ill.

Lawn Rakes.
Graham, John H. & Co., 113 Chambers St., N. Y.
Ney Mfg. Co., Canton, O.

Lawn Sprinklers.
Fan Lawn Sprinkler Co., San Francisco, Ill.
Kupferle, Jno. C., St. Louis, Mo.
McGowan, John H. Co., Cincinnati, O.
Pleuger & Henger Mfg. Co., St. Louis, Mo.

Lemon Squeezers.
Erie Specialty Co., Erie, Pa.
Williams, A. C., Ravenna, O.

Locks and Knobs.
Reading Hdw. Co., Reading, Pa.
U. S. Steel Lock Co., Clinton, Iowa.

Lubricants.
Dixon, Jos. Crucible Co., Jersey City, N. J

Machinery.
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Becker, John, Mfg. Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin's Sons, Thos., Allegheny, Pa.
Cincinnati Milling Mch. Co., Cincinnati.
Cincinnati Shaper Co., Cincinnati, O.
Cornell, J. B. & J. M., 26th St. & 11th Ave., New York City.
Crossley Mfg. Co., Trenton, N. J.
Davis, W. P. Machine Co., Rochester, N. Y.
Defiance Machine Works, Defiance, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Doan, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass
Farrel Fdry & Mch. Co., Ansonia, Conn.
Fish, H. C. Machine Works, Worcester, Mass.
Florence Machine Co., Florence, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Geometric Drill Co., Westville, Conn.
Harrington, E. Son & Co., Phila. Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass
Holmes, John E. & Co., Philadelphia, Pa.
Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis Mo.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe, J. J., 14 Dey St., N. Y.
Manning, Maxwell & Moore, 111-113 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huschart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks. 138 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Philadelphia Mch. Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poole, Robt. & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Pouiterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentice Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons, L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Steptoe, J. & Co., Cincinnati, O.
Thomas & Lowe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
York, S. M. Co., Cleveland, O.

Machinery Springs.
Scott, Chas. Spring Co., Phila., Pa.

Machine Screws.
Blake & Johnson, Waterbury, Conn.
Chicago Screw Co., Chicago Ill.
Haskell, Wm. H. Mfg. Co., Pawtucket.
Hubbell, Harvey, Bridgeport, Conn.
Miles, F. S., Phila., Pa.
New Britain Hdw. Mfg. Co., New Britain
Phila. Machine Screw Wks., Phila., Pa.
Reed & Curtis Mch. Screw Co., Worcester
Rhode Island Tool Co., Providence, R. I
Worcester Mch. Screw Co., Worcester

Machine Screw Work.
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Nuttall, R. D. Co., Allegheny, Pa.

Machine Wrenches.
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales.
Starrett, L. S. Co., Athol, Mass.

Machinists' Tools and Supplies.
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Waterford, N. Y.

Manganese Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties.
Hillman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R. Chicago, Ill.
Thomas, B., Chicago, Ill.

Meat Choppers.
Enterprise Mfg. Co. of Pa., Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.

Metal Brokers.
American Metal Co., 52 Broadway, N. Y

Metal Coating.
Steel & Iron Metal Coating Co., West Chicago, Ill.

Metal Factors.
Stroud, E. H. & Co., Chicago, Ill.

Metals.
Fearing, Wm. S., 256 Broadway, N. Y.
Hendricks Bros., 49 Cliff St., N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y

Metal Knives.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Trethewey, Sam'l & Co., Ltd., Pittsburgh.

Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.

Mica.
No. Carolina Mica Co., Boston, Mass

Mica Chimneys and Canopies
No. Carolina Mica Co., Boston, Mass.

Milling Machines.
Adams Co., Dubuque, Iowa.
Becker, John, Mfg. Co., Fitchburg, Mass.
Brown & Sharpe Mfg. Co., Providence.
Cincinnati Milling Machine Co., Cincinnati, Ohio.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Grant Machine Tool Works, Cleveland, O.
Lucas & Gleim, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.

Mill Supplies.
Bliss, R. Mfg. Co., Pawtucket, R. I.

Mincing Knives.
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Miners' Lamps.
McIntyre, Elmer, E., Pittsburgh, Pa.

Mining Machinery.
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.

Mining Screens.
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.

Motor Fans.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Schneider Mfg. Co., Cleveland, Ohio.

Motors, Air.
Stow Flexible Shaft Co., Phila., Pa.

Motors, Petroleum.
Daimler Mfg. Co., Long Island City, N. Y.

Motors, Water and Electric.
Dallett, Thomas H. & Co., Phila., Pa.
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

Music Wire.
Frasse Co., 19 Warren St., N. Y.

Nail Clippers.
Cook, H. C. & Co., Ansonia, Conn.

Nail Machinery.
Atherton, Jesse, Auburn, R. I.
Crescent Mfg. Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Scranton & Co., The, New Haven, Conn.
Snow, L. T., New Haven, Conn.

Nail Sets.
Snell Mfg. Co., Florence, Mass.

Nails (Cut) and Spikes.
Riverside Iron Wks, Wheeling, W. Va.

Name Plates, Machinery.
Becker, August, Boston, Mass.
Murdock Parlor Grate Co., Boston, Mass.

Natural Gas Pumps.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn.

Norway Shapes.
Rowland, William & Harvey, Frankford, Philadelphia.

Nuts.—*See Bolts.*

Nut Machines.
Dunham Nut Co., Unionville, Conn.

Oil Burners.
Brown, W. J., Philadelphia, Pa.

Oil Extractors.
Reed & Curtis Mch. Screw Co., Worcester

Oil Heaters.—*See Oil Stoves*

Oil Stones.
Norton Emery Wheel Co., Worcester, Mass.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves. (*See Stoves, Oil, Vapor and Gasoline.*)

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Ct

Oilless Bearings.
North American Metalline Co., Long Island City, N. Y.

Ore Breakers.
Cresson, Geo. V. Co., Phila., Pa.

Ores.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ox Balls.
Woodruff, Walter W. & Sons Mt. Carmel Conn.

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Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.

Paints.
Dixon, Jos. Crucible Co., Jersey City, N.J.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Paris Exhibition.
Markt & Co., Ltd., 103-94 West St., N.Y.

Patent Solicitors.
Donaldson, W. & Co., Washington, D. C.
Howson & Howson, Philadelphia and Washington.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Pattern Letters.
St. Louis Electrotype Foundry, St Louis.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Phosphor Bronze.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.

Phosphor Tin.
Halk & Naumann 518 Pearl St., N. Y.

Picture Cord.
Hendryx, A. B. Co., New Haven, Conn.
Ossawan Mills Co., Norwich, Conn.

Pig Casting Machines.
Heyl & Patterson, Pittsburgh, Pa.

Pig Forceps.
Reimers, J. N. & Co., Davenport, Iowa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall St., N. Y.

Pile Drivers.
Vulcan Iron Works, Chicago, Ill.

Pipe, Bent.
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Works Co., McKeesport, Pa.
Whitlock Coil Pipe Co., Elmwood, Conn.

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.

Pipe, Riveted Steel.
Pollock, W. H. Co., Youngstown, O.

Pipe Unions.
Dart, E. M. Mfg. Co., Providence, R. I.

Pipe, Water and Gas.
McNeal Pipe & Fdry. Co., Philadelphia, Pa.
Millar, C. & Son, Utica, N. Y.
National Tube Works Co., McKeesport, Pa.
Ohio Pipe Co., Columbus, O.
Riverside Iron Works, Wheeling, W. Va.
Wood, R. D. & Co., Philadelphia, Pa.

Planes.
Stanley Rule & Level Co., N.Y.

Planers.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Philadelphia, Pa.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Hilles & Jones Co., Wilmington, Del.
Hilles Tool Works, Hamilton, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Plated Ware.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Wallace, R. & Sons Mfg. Co., Wallingford Conn.

Plate, Iron and Steel.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia.

Platers' Supplies.
Cutter, Wood & Stevens, Boston, Mass.

Pliers.
Bridgeport Mfg. Co., Bridgeport, Conn.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N.Y.

Pop Guns.
Markham Air Rifle Co., Plymouth, Mich.

Poultry Fencing.
De Kalb Fence Co., De Kalb, Ill.

Poultry Nettings.
American Steel & Wire Co., Chicago, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton N. J.
Tyler Wire Works Co., W. S., Cleveland,
Wright & Colton Wire Cloth Co., Worcester, Mass.

Poultry Netting Display Rack.
Burson, Matthew, Batavia, Ill.

Power Hammers.
Beaudry & Co. Boston Mass.
Bradley Co., Syracuse, N. Y.
Dienelt & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, R. E., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
Wais & Roos Punch & Shear Co., Cincinnati O

Power Transmitting Mach'ry.
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Presses, Power.
Adriance Mach. Works Brooklyn, N. Y
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg Co., Providence R. I.
Niagara Machine & Tool Works, Buffalo.
Philia. Mch. Tool Co., Philadelphia, Pa.
Stiles, E. S. Press Co., Watertown, N. Y.
Wrightsville Hdw. Co., Wrightsville Pa.

Pruners.
Henry, John T. Mfg. Co., Hamden, Conn

Pulleys.
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Reeves Pulley Co., Columbus, Ind.
Saginaw Mfg. Co., Saginaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.

Pulley Lathes.
Woods, T. B. Sons, Chambersburg, Pa.

Pumping Machinery.
Cook, A. D., Lawrenceburg, Ind.
Filer & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Worthington, Henry R., 86 and 88 Liberty St., N. Y.

Pumps.
Barnes Mfg. Co., Mansfield, Ohio.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Humphreys Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
Red Jacket Mfg. Co., Davenport, Ia.
St. Joseph Pump & Mfg. Co., St. Joseph Mo.

Punches, Conductors.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power.
Bliss, E. W. Co., Brooklyn, N. Y.
Butts & Ordway Co., Boston, Mass.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Mersick, C. S. & Co., New Haven Conn.
New Doty Mfg. Co., Janesville, Wis.
Stiles E. S. Press Co., Watertown, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Wais & Roos Punch & Shear Co., Cincinnati, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.

Punching and Shearing.
Harrington & King Perforating Co., Chicago, Ill.

Push Carts.
Syracuse Chilled Plow Co., Syracuse.

Pyrometers.
Brown, Edward, Philadelphia, Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Railroad and Mine Spikes.
Green Ridge Iron Works Scranton, Pa.

Railways, Industrial.
Hunt, C. W. Co., West New Brighton, N. Y

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.

Razors.
Borgfeldt, Geo. & Co., W. 4th and Wooster Sts., N. Y.
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.

Razor Hones.
Pike Mfg. Co., Pike Station, N. H.

Reamers.
Morse Twist Drill & Mch. Co., New Bedford, Mass.
Standard Tool Co., Cleveland, Ohio.

Recording Gauges.
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Reels.
Hendryx, A. B. Co., New Haven, Conn.

Refrigerators.
Maine Mfg. Co., Nashua, N. H.

Registers.
Highton, Wm. & Sons, Nashua, N. H.

Relaying Rails.
Block-Pollak Iron Co., Chicago, Ill.
Dana & Co., 32 Broadway, N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
Steel Rail Supply Co., 100 B'dway, N. Y.

Reloading Tools.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn

Repairing Sets, Family.
Root Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark N. J.

Revolution Counters.
Pitkin, A. B. Mchry. Co., Providence, R. I.
Tabor Mfg. Co., Elizabeth, N. J.

Revolvers.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co., Worcester, Mass.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.

Rifles.
Remington Arms Co., Ilion, N. Y.
Stevens Arms and Tool Co., Chicopee Falls, Mass.

Rivets.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Jones & Laughlins, Ltd. Pittsburgh, Pa.
Rockford Bolt Works, Rockford, Ill.
Sternbergh, J. H. & Son, Reading, Pa.
Stimpson, Edw. B. & Son, 31 Spruce St.,
Townsend, C. C. & E. P., New Brighton, Pa.

Riveting Machines.
Shuster, F. B. Co., New Haven, Conn.

Rod Mill Machinery.
Morgan Construction Co., Worcester, Mass.

Roller Bearings.
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.

Rollers.
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn.
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Foundry Co., Pittsburgh.
Mesta Machine Co. Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Pittsburgh Shear Knife & Mch. Co., Pittsburgh, Pa.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolling Mills, Brass and Copper
Thompson, Hugh L., Waterbury, Ct.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd Co., Youngstown, O.
Farrel Fdry & Mch. Co., Ansonia, Conn
Frank-Kneeland Mach. Co., Pittsburgh.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
National Foundry Co., Troy, N. Y.
Phila. Roll & Mch. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, Ohio.
Seaman, Sheeth Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Fdry. & Mach. Co., Youngstown O.

Roofing and Siding.
Cincinnati Corrugating Co., Piqua, O.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.

Rope Shield.
Ironsides Co., Columbus, Ohio.

Rope Transmission and Hoisting.
Hunt, C. W. Co., West New Brighton, N. Y.
Woods, T. B. Sons, Chambersburg, Pa.

Rubber Goods
Boston Belting Co., Boston, Mass.
Canfield, H. O., Bridgeport, Conn.

Rubber Bampers.
Canfield, H. O., Bridgeport, Conn.

Rules.
Stanley Rule & Level Co. 29 Chambers.

Sad Irons.
Williams, A. C., Ravenna, O.

Sad Iron Handles.
Schrayers, M. Sons & Co., Chicago, Ill.

Safes.
Fischer's, John A. Sons, Covington, Ky.

Sample Holders.
Brinkerhoff, N. M., Gibsonburg, O.

Sand Blast Apparatus.
Ward, Edgar T. & Sons, Boston, Mass.

Sand Mixer.
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Caldwell Mfg. Co., Rochester, N. Y.
Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains.
Hendryx, A. B. Co., New Haven, Conn.
Morton, Thos., 65 Elizabeth, N. Y.
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston Mass.
Smith & Egge Mfg. Co., Bridgeport.

Sash Locks.
Fitch, W. & E. T. Co., The, New Haven, Ct.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Forge Co., Lansingburgh, N. Y.
Grand Rapids Sash Pulley Co., Grand Rapids, Mich.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E., & Co., Philadelphia, Pa.

Sausage Stuffers.
National Specialty Mfg. Co., Phila., Pa.

Saws.
Atkins, E. C. & Co., Indianapolis, Ind.
Bishop, Geo. H. & Co., Cincinnati, Ohio.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.
Simonds Mfg. Co., Fitchburg Mass.

Saw Handles.
Ladd, W. C., Bristol, Conn.

Saw Sets.
Disston, Henry & Sons, Phila., Pa.
Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools.
Atkins, E. C. & Co., Indianapolis, Ind.

Scales.
Chatillon, John & Sons, 85-89 Cliff, N. Y.
Lowell Scale Co., Lowell, Mass.
Pelouze Scale & Mfg. Co., Chicago, Ill.
Standard Scale & Supply Co., Pittsburgh.

Schools and Colleges.
Michigan College of Mines, Houghton, Mich.

Scrap Metals.
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.
Botjer, C., Hoboken, N. J.
Grant, Robt. & Co., 253 Broadway, N. Y.
Hitner, H. A. & Sons, Phila., Pa.
Janson Iron Co., Columbia, Pa.
Leonard, John & Co., 229 Broadway, N. Y
N. J. Iron & Metal Co., Paterson, N. J.
Osborne, D. M. & Co., Auburn, N. Y.
Perry, Wm. H. Co., Providence, R. I.
Smith, Morton B., New York.

Scrapers, Road.
American Steel Scraper Co., Sidney, O.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Sidney Steel Scraper Co., Sidney, O
Syracuse Chilled Plow Co., Syracuse, N.Y.

Screen Door Catch.
Automatic Door Catch Co., Chicago, Ill.

Screens, Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door.
Darby, Edw. & Sons, Philadelphia, Pa.
Porter Screen & Mfg. Co., Burlington, Vt.

Screw Cutting Machinery.
Card, S. W. Mfg. Co., Mansfield, Mass.
Geometric Drill Co., Westville, Conn.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Disston, Henry & Sons, Philadelphia, Pa.
Goodell Bros. Co., Greenfield, Mass.
North Bros. Mfg. Co., Philadelphia, Pa.
Sawyer Tool Co., Fitchburg, Mass.

Screw Machinery.
Brown & Sharpe Mfg. Co., Providence.
Costilo, J. E. Mch. Wks., Brooklyn, N. Y.
Draper Mach. Tool Co., Worcester, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Jones & Lamson Mch. Co., Springfield, Vt.

Screws, *Makers of.*
Chicago Screw Co., Chicago, Ill.
Franklin Moore Co., Winsted, Conn.
Miles, F. S., 205 Quarry, Philadelphia.
Phila. Mach. Screw Works, Phila., Pa.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John Co., Rockford, Ill.
Millers Falls Co., 93 Reade St., N. Y.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones.
Cleveland Stone Co., Cleveland, O.
Pike Mfg. Co. Pike Station, N. H.

Seed Sowers.
Goodell Co., Antrim, N. H.

Shade Roller Fixtures.
Standard Stamping & Die Co., Brooklyn, N. Y.

Shafting.
Cresson, Geo. V. Co. Philadelphia, Pa.
Cumberland Iron & Steel Shafting Co., Cumberland Md.
Dodge Mfg. Co., Mishawaka, Ind.
Fairmount Mch. Co., Philadelphia, Pa.
Finished Steel Co., Youngstown, O.
Jones & Laughlins Co., Pittsburgh, Pa.
Seliers, Wm. & Co., Inc., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel.
Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Passaic Rolling Mill Co., Paterson, N. J.
The Phœnix Iron Co., Phila., Pa.
Roberts, A. & P. & Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
Whitney, A. R. & Co. 71 Broadway, N.Y.

Shaping Machines.
Cincinnati Shaper Co., Cincinnati, O.
Gould & Eberhardt, Newark, N. J.
Potter & Johnston Co., Pawtucket, R. I.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn.
Cattaraugus Cutlery Co., Little Valley, N. Y.
Heinisch's, R. Sons Co., Newark, N. J.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Sheet and Bolt Copper.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet and Rolled Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Sheet Metal Machinery.
Adriance Mach. Works, Brooklyn, N. Y.

Sheets, Galvanized.
Apollo Iron & Steel Co., Pittsburgh, Pa
Cambridge Iron & Steel Co., Cambridge, O.

Sheets, Iron and Steel.
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Alan Wood Co., Philadelphia.
Cincinnati Corrugating Co., Piqua, O.
Pierson & Co., 29 Broadway, N. Y.
Scottdale Iron & Steel Co., Scottdale, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Steel & Iron Metal Coating Co., West Chicago, Ill.
Stroud, E. H. & Co., Chicago, Ill.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes.
Heller, W. C. & Co., Montclair, N. J.
Moore, C. P., Ravenswood, W. Va.

Shelf Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Shelving.
Warren, J. D. Mfg. Co., Chicago, Ill.

Shovels, Spades and Scoops.
Avery Stamping Co., Cleveland, Ohio.
St. Louis Shovel Co., St. Louis, Mo.

Sieves.
Darby, Edw. & Sons, Philadelphia, Pa.

Sinks.
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Slaw Cutters.
Disston, Henry & Sons, Philadelphia, Pa.

Smelting Works.
Reeves, Paul S., 700 S. Broad, Phila.

Soapstone Goods.
Pike Mfg. Co., Pike Station, N. H.

Soldering Copper Handles.
Cleveland Rule & Handle Co., Cleveland, O.

Soldering Coppers.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spark Coils.
Varley Duplex Magnet Co., Jersey City N. J.

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Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St. N. Y.

Specialty Manufacturers.
Franklin H. H. Mfg. Co., Syracuse, N. Y.
Kulp, D. H., Marietta, Pa.
Smith & Egge Mfg. Co., Bridgeport, Ct.
Wheeling Hinge Co., Wheeling, W. Va.

Spelter.
Illinois Zinc Co., Peru, Ill.
Matthiessen & Hegeler Zinc Co., La Salle Ill.

Spelter Solder.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spoons and Forks.
Rogers, The Wm. Mfg. Co., Hartford, Ct.
Wallace, R. & Sons Mfg. Co., Wallingford Conn.

Sporting Goods.
Dame, Stoddard & Kendall, Boston, Mass.

Spray Pumps.—*See Pumps.*

Springs.
Barnes, Wallace Co., Bristol, Conn.
Clark & Cowles, Plainville, Conn.
Cleveland Wire Spring Co., Cleveland, O
Dunbar Bros., Bristol, Conn.
Lord Bros Mfg Co., Tilton N. H.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Scott, Chas. Spring Co., Phila., Pa.
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cotters.
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges.
Bommer Bros., Brooklyn, N. Y.
Van Wagoner & Williams Hdw. Co., Cleveland O.

Stamped Ware.
Jenkinson, R. C. & Co., Newark, N. J.
Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal.
American Railway Supply Co., 24 Park Place, N. Y.
Clay, Oliver P. Co., Cleveland, O.
Cleveland Stamping & Tool Co., Cleveland, O.
Grand Rapids Brass Co., Grand Rapids, Mich.
Hatheway Mfg. Co., Bridgeport, Conn.
Houghton & Buxton Mfg. Co., Worcester Mass.
Jenkinson, R. C. & Co., Newark, N. J.
Konigslow, E. & Bro., Cleveland, O.

Staples.
Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street

Steam Heating.
Webster, Warren & Co., Camden, N. J.

Steam Separators.
Harrison Safety Boiler Wks., Phila., Pa.
Webster, Warren & Co., Camden.

Steam Shovels.
Vulcan Iron Works, Toledo, Ohio.

Steam Specialties.
Crosby Steam Gage & Valve Co., Boston.
Lunkenheimer Co., Cincinnati, Ohio.
Mason Regulator Co., Boston, Mass.

Steam Traps.
Eynon-Evans Mfg. Co., Philadelphia, Pa.

Steel Buildings.
Berlin Iron Bridge Co., East Berlin, Ct.
Boston Bridge Works, Boston, Mass.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburg, Pa.

Steel, Cold Rolled Strip.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Johnson, Geo., Catasauqua, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport,
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel Flanges, Weldless.
Latrobe Steel Co., Philadelphia, Pa.

Steel Hoops.
Export Iron & Steel Co., Pittsburgh, Pa.

Steel Importers.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Wheelock, Lovejoy & Co., N. Y., and Boston.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Bethlehem Iron Co., S. Bethlehem, Pa.
Boker, Hermann & Co., 103 Duane St.
Braeburn Steel Co., Braeburn, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Cumberland Iron & Steel Shafting Co., Cumberland, Md.
Frankford Steel Co., Philadelphia.
Hart & Cooley Mfg. Co., So. Chicago, Ill.
Hobson, Seaman & Co., 98 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlow, S. & C., Sheffield, Eng.
Whitney, A. R. & Co., 71 Broadway, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport.
Manufacturers' Agents.
O'Donnell, James, Chicago, Ill.
Ogden & Wallace, 577-585 Greenwich St.
Pierson & Co., 29 Broadway, N. Y.
Snyder, W. P. & Co., Pittsburgh, Pa.

Steel, Self Hardening.
Denman & Davis, 85-87 John St., N. Y.

Steel Rails.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Riverside Iron Wks., Wheeling, W. Va.

Steel Stamps and Stencil Dies.
Ness, Geo. M., Jr., 61 Fulton St. N. Y.
Schwerdtle & Siebert, Bridgeport, Conn.

Steel, Tool.
Braeburn Steel Co., Braeburn, Pa.
Damascus Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.

Step Ladders, Rolling.
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke,
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.

Stocks and Dies.
Besly, C. H. & Co., Chicago, Ill.
Caro, S. W. Mfg. Co., Mansfield, Mass.
Curtis & Curtis, Bridgeport, Conn.
Jones & Lamson Mch. Co., Springfield, Vt.
Jarecki Mfg. Co., Erie, Pa.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield,

Stokers.
Sellers, Wm. & Co., Phila., Pa.

Stone Working Machinery.
Patch, F. R. Mfg. Co., Rutland, Vt.

Store Fixtures.
Dempsey Mfg. Co., Fayette, Ind.
Warren, J. D. Mfg Co., Chicago, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y.

Stoves, Oil, Vapor & Gasoline.
Schneider & Trenkamp Co., Cleveland, O

Structural Iron Work.
Berlin Iron Bridge Co., E. Berlin, Conn.
Boston Bridge Works, Boston, Mass.
Moseley Iron Bridge & Roof Co., 39 Cortlandt St., N. Y.
Riter-Conley Mfg. Co., Pittsburgh, Pa.
Shiffler Bridge Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co., La Salle, Ills

Swaging Machines.
Excelsior Needle Co., Torrington, Conn.

Table Ware.
Rogers, Wm Mfg. Co., Hartford, Conn.
Wallace, R. & Sons Mfg. Co., Wallingford Conn.

Tack Claws.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Tacks, Brads, Staples, &c.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Ripley & Bartlett, Plymouth, Mass.
Shelton Co., Birmingham, Conn.
Tower Mfg. Co., Madison, Ind.

Tack and Nail Machinery.
Kimball Bros. & Sprague, Brockton, Sweetser, W. A., Brockton, Mass.

Tap Holder.
Ideal Machine Works, Hartford, Conn.

Taps and Dies.
Butterfield & Co., Derby Line, Va.
Card, S. W. Mfg. Co., Mansfield, Mass.
Proudman Bros., Meriden, Conn.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Telephones.
Rawson Electric Co., Elyria, Ohio.

Terne Plate.
American Tin Plate Co., Chicago, Ill.

Thuroscopes.
Bayer & Co., Paila, Pa.

Time Recorders.
Heywood Bros. & Wakefield, Gardner, Mass.

Tin Mills.
Philadelphia Roll & Mch. Co., Phila., Pa.
Phillips, F. S. Sons, Phila., Pa.

Tinners' Tools and Machines.
Niagara Machine & Tool Works, Buffalo,

Tin Plate.
American Tin Plate Co., Chicago, Ill.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, O.

Tinware.
Keen & Hagerty Mfg. Co., Baltimore

Tire Repair Outfits.
Dame, Stoddard & Kendall, Boston, Mass

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

Tool Chests.
Am. Tool Chest Co., 200 W. Houston St.,
Bliss, R. Mfg. Co., Pawtucket, R. I.

Tools.
Athol Machine Co., Athol, Mass.
Brown, R. H. & Co., New Haven, Conn.
Goodell Bros. Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls,
Millers Falls Co., 93 Reade, N. Y.
Schollhorn, Wm. Co., New Haven, Conn
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers.
Starrett, L. S. Co., Athol, Mass.
Stevens J., Arms & Tool Co., Chicopee.
Tuck Mfg. Co., Brockton, Mass.

Tools, Blacksmith and Wheelwright.
Butts & Ordway Co., Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg., Co., Greenfield Mass.

Tools, Steam and Gas Fitters'.
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline.
Schneider & Trenkamp Co., Cleveland, O

Tote Boxes.
Clark W. J. & Co., Salem, O.

Trouser Guards.
Stimpson, Edw. B. & Son, 31 Spruce St., N. Y.

Trowels.
Bishop, Geo. H. & Co., Cincinnati, O.
Disston, Henry & Sons, Phila., Pa.
National Saw Co., Newark, N. J.

Trucks.
Boston & Lockport Block Co., Lockport,
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N. Y

Truck Wheels.
Havana Metal Wheel Co., Havana, Ill.

Tub Hoops.
Oatman Bros., Medina, Ohio.

Tube Bending Machines.
Bridgeport Tubing Co., Bridgeport, Conn

Tube Cutters.
Groves & Haines, Philadelph'a, Pa.

Tubes, Seamless Drawn Copper, Brass and Bronze.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubing, Brass.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Spofford, W. S. & Son, Providence, R. I.

Tubing, Iron.
Phœnix Tube Co., Brooklyn, N. Y.

Tubing, Steel.
Leng's, John S. Son & Co., 4 Fletcher St.
National Tube Wks. Co., McKeesport, Pa.
Pope Tube Co., Hartford, Conn.
Shelby Steel Tube Co., Cleveland, O.
Wilmot & Hobbs Mfg. Co., Bridgeport,

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.

Twist Drills.
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
Slocomb, J. T. & Co., Providence, R. I.
Standard Tool Co., Cleveland.

Upholsterers' Hardware.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Turner & Seymour Mfg. Co., Torrington.

Valves, Gas, Water and Steam.
Ashton Valve Co., Boston, Mass.
Chapman Valve Mfg. Co., Boston.
Crosby Steam Gage & Valve Co., Boston.
Jenkins Bros., 71 John, N. Y.
Kennedy Valve Mfg. Co., 75 John St., N. Y.
Lunkenheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John, N. Y.
Mason Regulator Co., Boston, Mass.
Wood, R. D. & Co., Philadelphia, Pa.

Vehicles.
Parry Mfg. Co., Indianapolis, Ind.

Ventilating Fans.
American Blower Co., Detroit, Mich.
Bayley, Wm. & Sons Co., Milwaukee, Wis.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton St., N. Y.

Ventilators.
Enterprise Foundry Co., Cincinnati, O.

Vises.
Athol Machine Co., Athol, Mass.
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Bonney Vise & Tool Wks., Phila., Pa.
Hollands Mfg. Co., Erie, Pa.
Lewis Tool Co., 44 Barclay St., N. Y.
Massey Vise Co., Chicago, Ill.
Parker, Chas Co., Meriden, Conn.
Prentiss Vise Co., 44 Barclay, N. Y.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
Lane Bros. Co., Poughkeepsie, N. Y.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Wagons.
Shipman, Bradt & Co., De Kalb, Ill.

Washers.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Nut & Washer Mfg. Co., Milwaukee, Wis.
Sternbergh, J. H. & Son, Reading, Pa.
Wilson & Smith, Worcester, Mass.

Washing Machines.
Brammer, H. F. Mfg. Co., Davenport, Ia.
Cyclone Washing Mch. Co., Battle Creek, Mich.
Michigan Washing Mch. Co., Muskegon, Mich.

Watches.
Ingersoll, Robt. H. & Bro., 67 Cortlandt St.

Water Gates.
Kennedy Valve Mfg. Co., 75 John St., N. Y.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weaners.
Carroll Muzzle Co., Carroll, Iowa.

Weldless Steel Flanges.
Latrobe Steel Co., Philadelph a, Pa.

Well Supplies.
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows.
American Steel Scraper Co., Sidney, O.
Havana Metal Wheel Co., Havana, Ill.
Kilbourne & Jacobs Mfg. Co., Columbus.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Wind Mills.
Flint & Walling Co., Kendallville, Ind.

Window Cord.
Samson Cordage Works, Boston, Mass.

Window Fasteners.
Stanley Works, New Britain, Conn.

Window Weights.
Barney & Reed Mfg. Co., Boston, Mass.

Wire.
Cleveland Wire Spring Co., Cleveland, O
Dillon-Griswold Wire Co., Sterling, Ill.
Kidd Bros. & Burgher Steel Wire Co., McKee's Rock, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Haven Wire Mfg. Co., New Haven.
Norristown Wire Co., Norristown, Pa.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Stewart Wire Co., Easton, Pa.
Townsend, C. C. & E. P., New Brighton.
Trenton Iron Co., Trenton N. J.
Washburn & Moen Mfg. Co., Worcester.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains.
Bridgeport Chain Co., Bridgeport, Conn.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Oneida Community, Ltd., Niagara Falls, N. Y.

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey Wire Works Co., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
N. J. Wire Cloth Co., Trenton, N. J.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheeler's Sons, Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
W. S. Tyler Wire Works Co., Cleveland
Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters.
Chandler & Farquhar, Boston, Mass.
King, J. M. & Co., Watertown, N. Y.
Schollhorn, Wm. Co., New Haven, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.

Wire Dies.
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Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods.
Brooks, M. S. & Sons, Chester, Conn.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hendee Wire Brush Co., Milwaukee, Wis.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
New York Wire Cloth Co., 102 Chambers St., N. Y.
Scheelers Bros., Buffalo, N. Y.
Wickwire Bros., Cortlandt, N. Y.
Wire Goods Co., Worcester, Mass.

Wire Forming Machinery.
American Wire Goods Co., Lowell, Mass.
Automatic Machine Co., Bridgeport, Ct.
Bates Machine Co., Joliet, Ill.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Conn.
Proudman Bros., Meriden, Conn.
Shuster, F. B. Co., New Haven, Conn.

Wire Mill Machinery.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

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Townsend, C. C. & E. P., New Brighton

Wire Nail Machinery.
Bates Machine Co., Joliet, Ill.
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Wire Parts.
Jenkinson, R. C. & Co., Newark, N. J.

Wire Rods, Steel.
American Steel & Wire Co., Chicago, Ill.
Washburn & Moen Mfg. Co., Worcester,
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel.
Broderick & Bascom Rope Co., St. Louis,
Hazard Mfg. Co., Wilkesbarre, Pa
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester

Wire Rope Clip.
Cincinnati Railway Supply Co., Cincinnati, O.

Wire Straightening and Cutting Machinery.
Shuster, F. B. Co., New Haven, Conn.

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Star Mfg. Co., Carpentersville, Ill.
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Zinc Nails.
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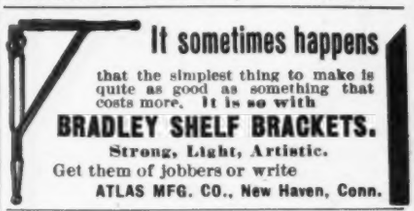

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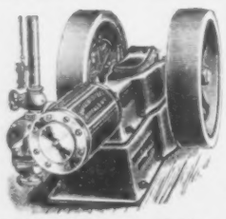
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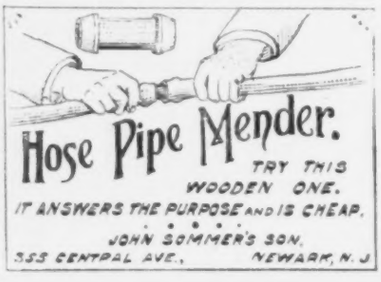

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